The PHOTOFACT® Servicer

SET 558 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ DEC. 1961

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

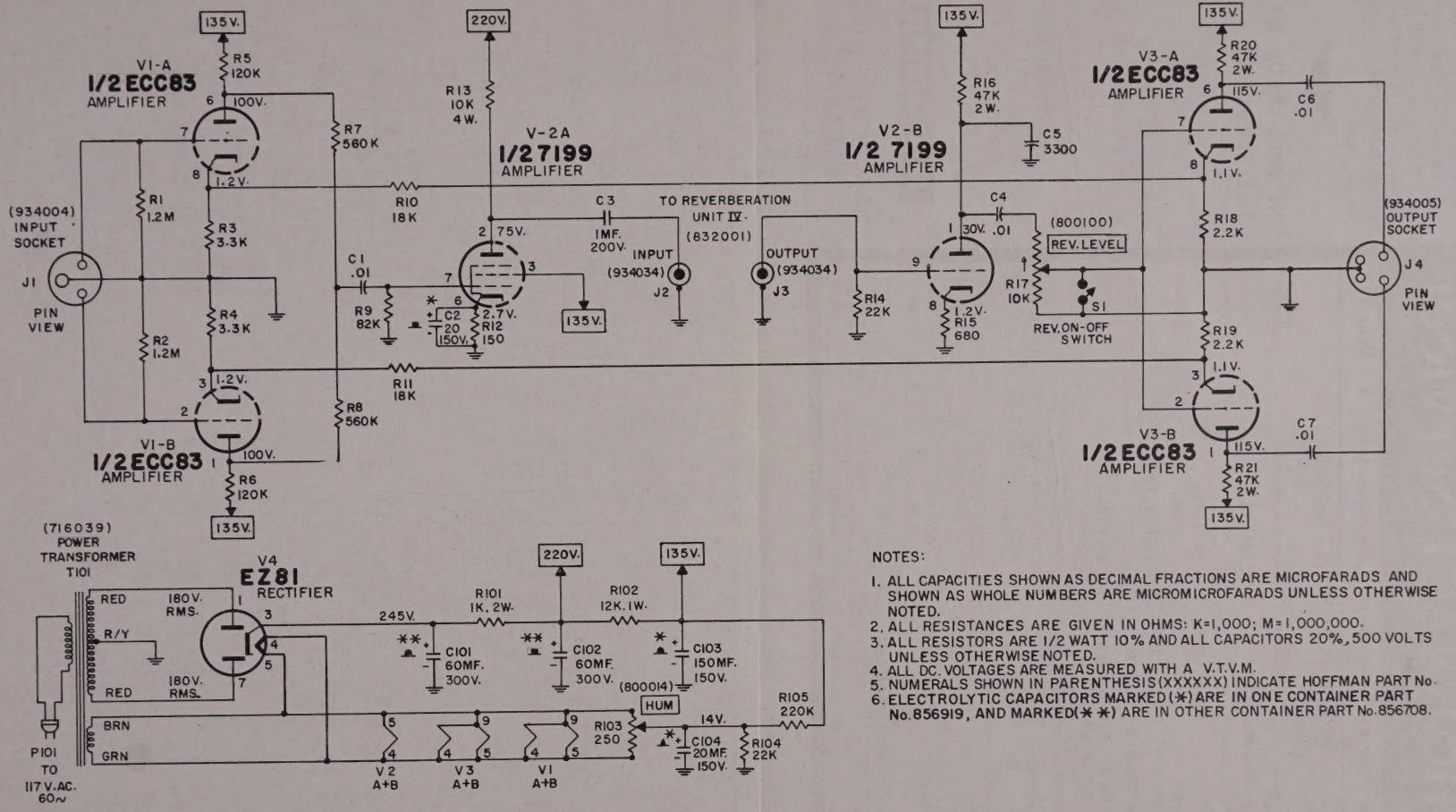
IN THIS ISSUE OF THE SERVICER:

Bennett Model 101

Hoffman Models 8014, 8015, 8016, 9003 (CH. 1157)

SPECIAL NOTICE

TWO EXTRA JACKETS INCLUDED TO REPLACE 555-1 & 555-2

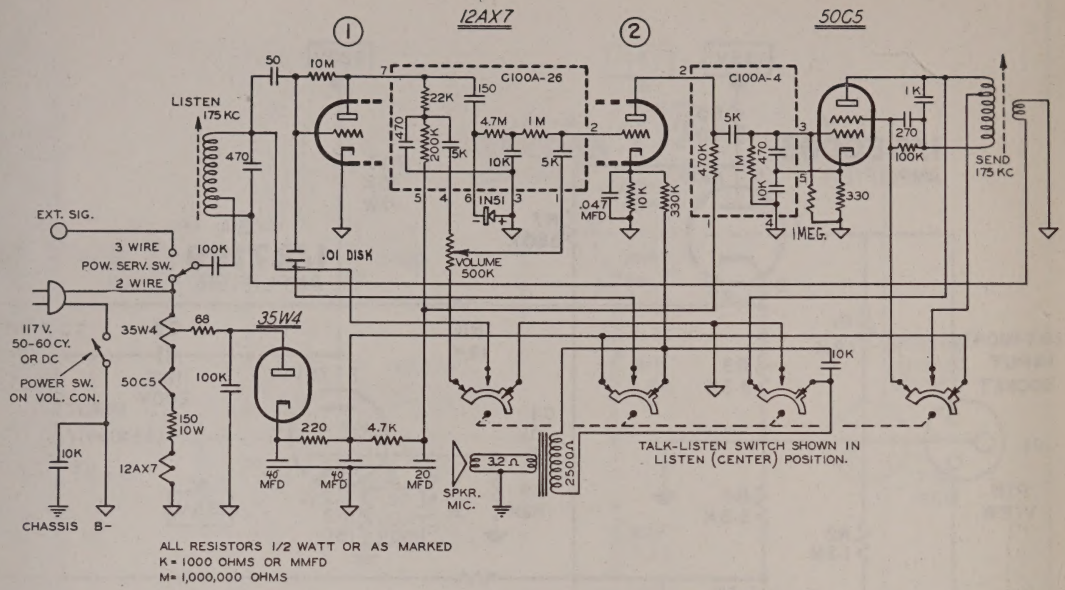


NOTES:

1. ALL CAPACITIES SHOWN AS DECIMAL FRACTIONS ARE MICROFARADS AND SHOWN AS WHOLE NUMBERS ARE MICROMICROFARADS UNLESS OTHERWISE NOTED.
2. ALL RESISTANCES ARE GIVEN IN OHMS: K=1,000; M=1,000,000.
3. ALL RESISTORS ARE 1/2 WATT 10% AND ALL CAPACITORS 20%, 500 VOLTS UNLESS OTHERWISE NOTED.
4. ALL DC. VOLTAGES ARE MEASURED WITH A V.T.V.M.
5. NUMERALS SHOWN IN PARENTHESIS (XXXXXX) INDICATE HOFFMAN PART No.
6. ELECTROLYTIC CAPACITORS MARKED (*) ARE IN ONE CONTAINER PART No. 856919, AND MARKED (**) ARE IN OTHER CONTAINER PART No. 856708.

HOFFMAN MODELS 8014, 8015, 8016, 9003 (CH. 1157) REVERB AMP

Schematic Diagram Courtesy of Hoffman Electronics Corporation



ALIGNMENT PROCEDURE - "RECEIVING"

EQUIPMENT: R. F. Signal Generator - Tunable to 175 kc.
Vacuum Tube Voltmeter - DC type.

PROCEDURE:

(1) Place POWER SERVICE SWITCH on rear of unit in "3-WIRE" position. Place "talk-listen" switch in "listen" position. Turn unit ON.
(2) Connect R. F. Signal Generator(Modulation - OFF) hot lead to External Signal Terminal. Connect ground lead to chassis. Turn R. F. Signal Generator "R. F. Output" control to zero output.
(3) Connect V.T.V.M. hot lead to negative (cathode) terminal of diode. Connect ground lead to B minus terminal (plate end) of diode.
(4) Place V.T.V.M. on low positive voltage scale (Approx. 3 volts).
(5) Advance Signal Generator "R. F. Output" control until reading is obtained on V.T.V.M.
(6) Adjust slug in "listen" coil for maximum V.T.V.M. reading. Turn Signal Generator "R. F. Output" control DOWN to keep V.T.V.M. reading on scale. Do not Turn V.T.V.M. to higher voltage scale.
(7) Continue slug adjustment until maximum V. T. V. M. reading is reached on low voltage scale. Due to A.V.C. action of detector, make tuning adjustments at an R. F. input level that does not exceed about 3 volts as indicated by the V.T.V.M. across the diode.

ALIGNMENT PROCEDURE -"SENDING"

EQUIPMENT: R. F. Signal Generator - Tunable to 175 kc. with 1 volt output.
Vacuum Tube Voltmenter - AC type, Oscilloscope or any other type of zero beat indicator.

PROCEDURE:

(1) Place POWER SERVICE SWITCH on rear of unit in "3-WIRE" position. Place "talk-listen" switch in "constant talk" position. Turn Unit ON.
(2) Connect R. F. Signal Generator (Modulation -OFF) hot lead to External Signal Terminal. Connect ground lead to chassis. Turn R. F. Output control to about 1 volt output position and tune to 175 kc.
(3) Connect V.T.V.M. (Approx 3 volts AC scale), Oscilloscope or other type zero beat indicator, hot lead to External Signal Terminal on rear of chassis. Connect ground lead to chassis.
(4) Adjust slug in "send" coil until zero beat is indicated. Zero beat may be determined by tuning the Signal Generator slightly to each side of 175 kc. and observing the beat note change in frequency.

Information Courtesy of Bennett Laboratories, Incorporated

FOLDER 1
SET 558

PHOTOFACT® Folder

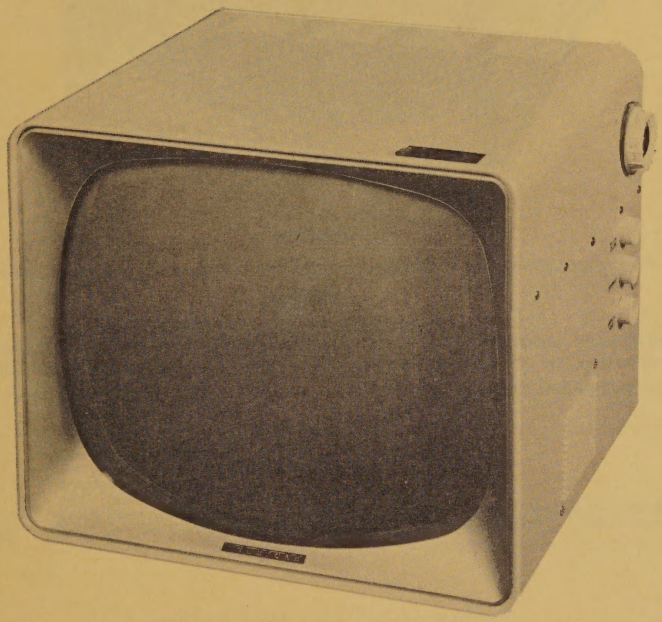
TRUETONE MODELS
2DC3220, 2DC3221

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

TRUETONE MODELS
2DC3220, 2DC3221



TRUETONE MODELS
2DC3220, 2DC3221

2DC3220

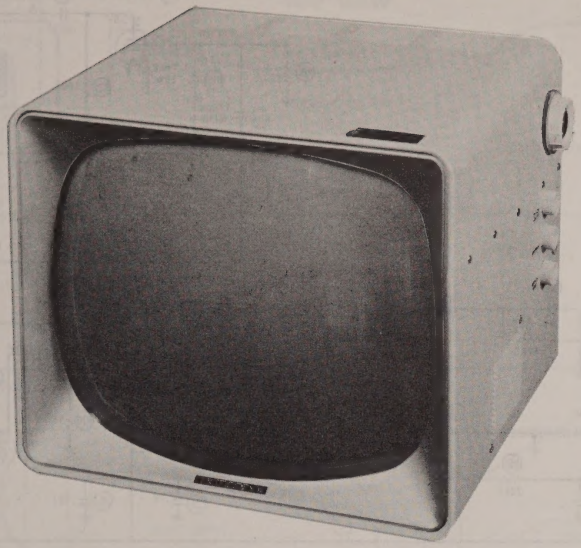
SET 558 FOLDER 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

TRUETONE MODELS 2DC3220, 2DC3221

TRUETONE MODELS 2DC3220, 2DC3221



2DC3220

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRUETONE MODELS 2DC3220, 2DC3221

TRADE NAME	Truetone Models 2DC3220, 2DC3221
SUPPLIER	Western Auto Supply Co., 2107 Grande Avenue, Kansas City, Mo.
TYPE SET	Television Receiver
TUBES	VHF - Thirteen, UHF - Fourteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING VHF - 110 Watts, 1 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

FUSE DEVICE

A 4.7Ω fusible resistor is used for low voltage power supply protection. (See "Tube Placement Chart" for location.)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, it is necessary to remove the antenna terminal strip. (See "Cabinet - Rear View").

AGC

No provision is made to vary the AGC on this receiver.

FOCUS

No provision is made to vary the Focus on this receiver..

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Frequency Slug (B1). (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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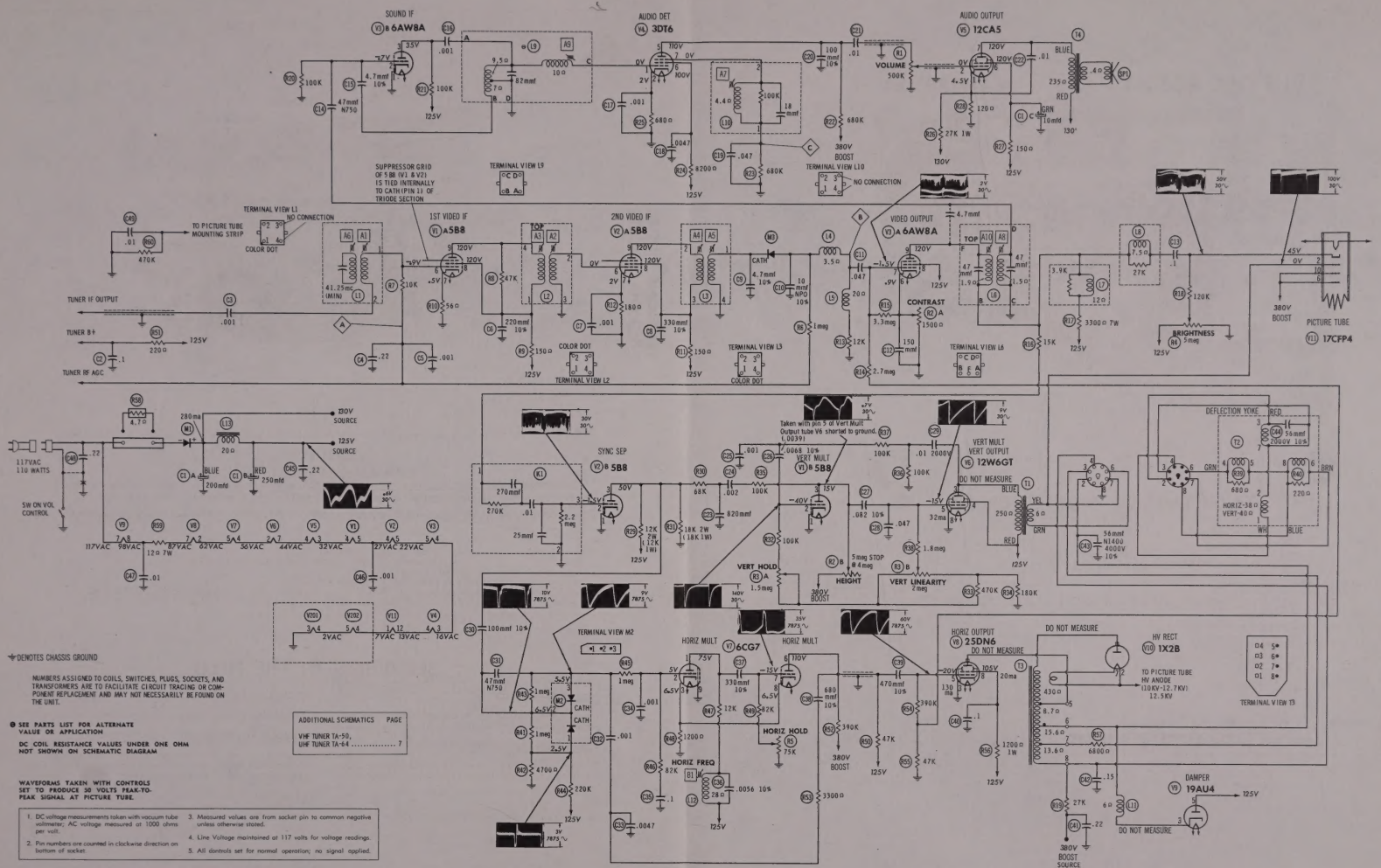
SOUND IF
V3 B 6AW8A
AUDIO DET
V4 3DT6
AUDIO OUTPUT
V5 12CA5
VOLUME
500K
380V BOOST
SUPPRESSOR GRID OF 5B8 (V1 & V2) IS TIED INTERNALLY TO CATH (PIN 1) OF TRIODE SECTION
TERMINAL VIEW L9
TERMINAL VIEW L10
NO CONNECTION
TERMINAL VIEW L1
TO PICTURE TUBE MOUNTING STRIP
COLOR DOT
1ST VIDEO IF
V1 A 5B8
2ND VIDEO IF
V2 A 5B8
TERMINAL VIEW L2
TERMINAL VIEW L3
VIDEO OUTPUT
V3 A 6AW8A
CONTRAST
TERMINAL VIEW L6
BRIGHTNESS
5meg
380V BOOST
PICTURE TUBE
V11 17CFP4
TUNER IF OUTPUT
TUNER B+
TUNER RF AGC
SYNC SEP
V2 B 5B8
VERT MULT
V1 B 5B8
VERT MULT VERT OUTPUT
V6 12W6GT
DO NOT MEASURE
DEFLECTION YOKE
HORIZ-38Ω VERT-40Ω
VERT HOLD
VERT LINEARITY
HEIGHT
HORIZ MULT
V7 6CG7
HORIZ OUTPUT
V8 25DN6
HV RECT
V10 1X2B
TO PICTURE TUBE HV ANODE (10KV-12.7KV) 12.5KV
TERMINAL VIEW T3
HORIZ FREQ
HORIZ HOLD
75K
DAMPER
V9 19AU4
380V BOOST SOURCE
117VAC 110 WATTS
SW ON VOL CONTROL
130V SOURCE
125V SOURCE
117VAC 98VAC 87VAC 82VAC 56VAC 44VAC 32VAC 27VAC 22VAC
2VAC 5VAC 7VAC 13VAC 16VAC
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
ADDITIONAL SCHEMATICS PAGE
VHF TUNER TA-50, UHF TUNER TA-64 7
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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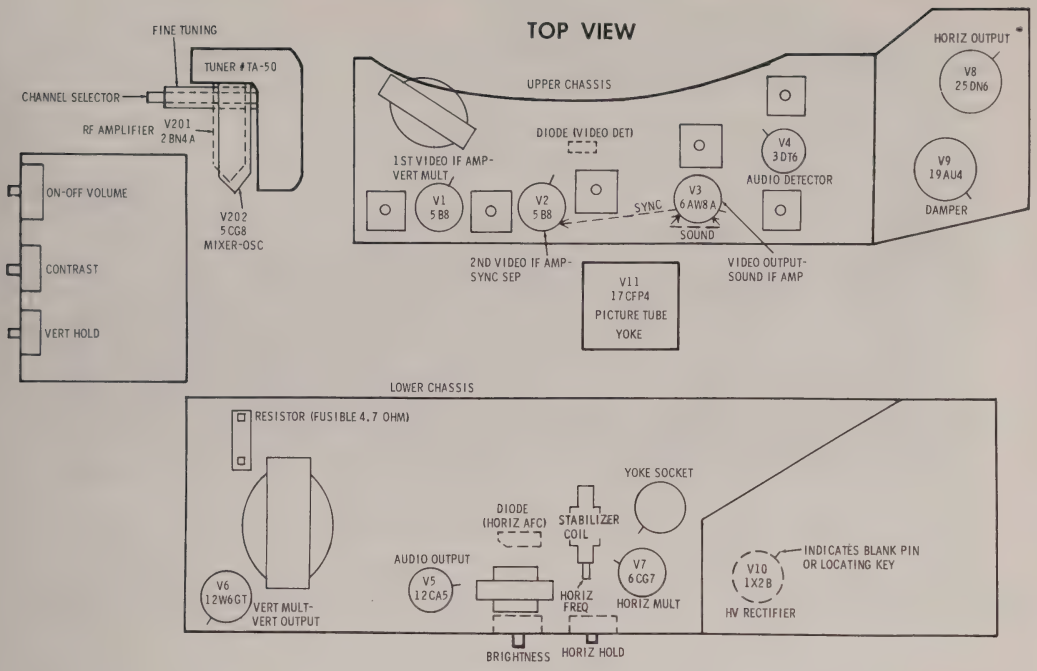
TRUETONE MODELS 2DC3220, 2DC3221

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

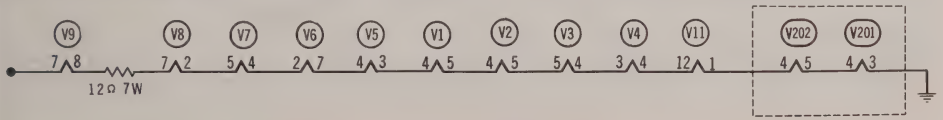
POWER SUPPLY FAILURE
No raster, no sound Resistor (4.7Ω Fusible), Rectifier M1

SWEEP FAILURE
No raster, has sound V7, V8, V9, V10, V11
No vertical deflection V1, V6
Poor vert. linearity or foldover V1, V6
Poor horiz. linearity or foldover V7, V8, V9
Narrow picture V7, V8, V9, M1
Vert. off freq. V1, V6
Horiz. off freq. Diode (Horiz. AFC), V7

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, Diode (Video Det.), V3
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3, V11
Has pic, no sound V3, V4, V5

SYNC FAILURE
No vert. sync V2
No horiz. sync V2
No vert. or horiz. sync V2

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



TRUETONE MODELS
2DC3220, 2DC3221

FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication.
Set Contrast control fully counterclockwise.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side to ungrounded tube shield over Mixer-Osc. Low side to chassis.	44MC (10MC Swp.)	41.25MC 42.25MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 10K to point Ⓑ . Low side to chassis.	A1, A2, A3, A4, A5, A6 and Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. The Mixer Plate Coil and A3 affect low frequency side of curve, A1 and A2 affect high frequency side, A4 and A5 affect center range and A6 is adjusted to place 41.25MC marker in trap notch.

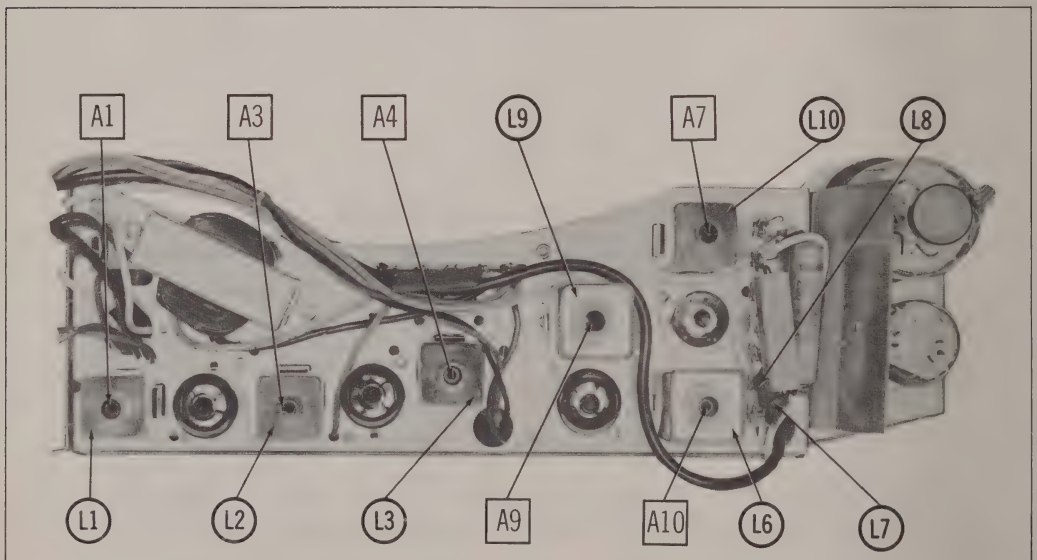
SOUND IF ALIGNMENT

Tune in a strong TV signal and adjust A7 for maximum undistorted sound. If two peaks occur, connect the DC probe of the VTVM to point Ⓒ and common to chassis. Adjust to the peak that produces the highest reading on the VTVM.
Reduce the signal strength (by disconnecting the antenna or connecting an attenuator in series with the antenna lead) until noise is heard in the sound. Adjust A8 and A9 for maximum undistorted sound.
Reduce the signal strength even further and retouch A8 and A9 for maximum undistorted sound. If necessary, repeat the above procedure.

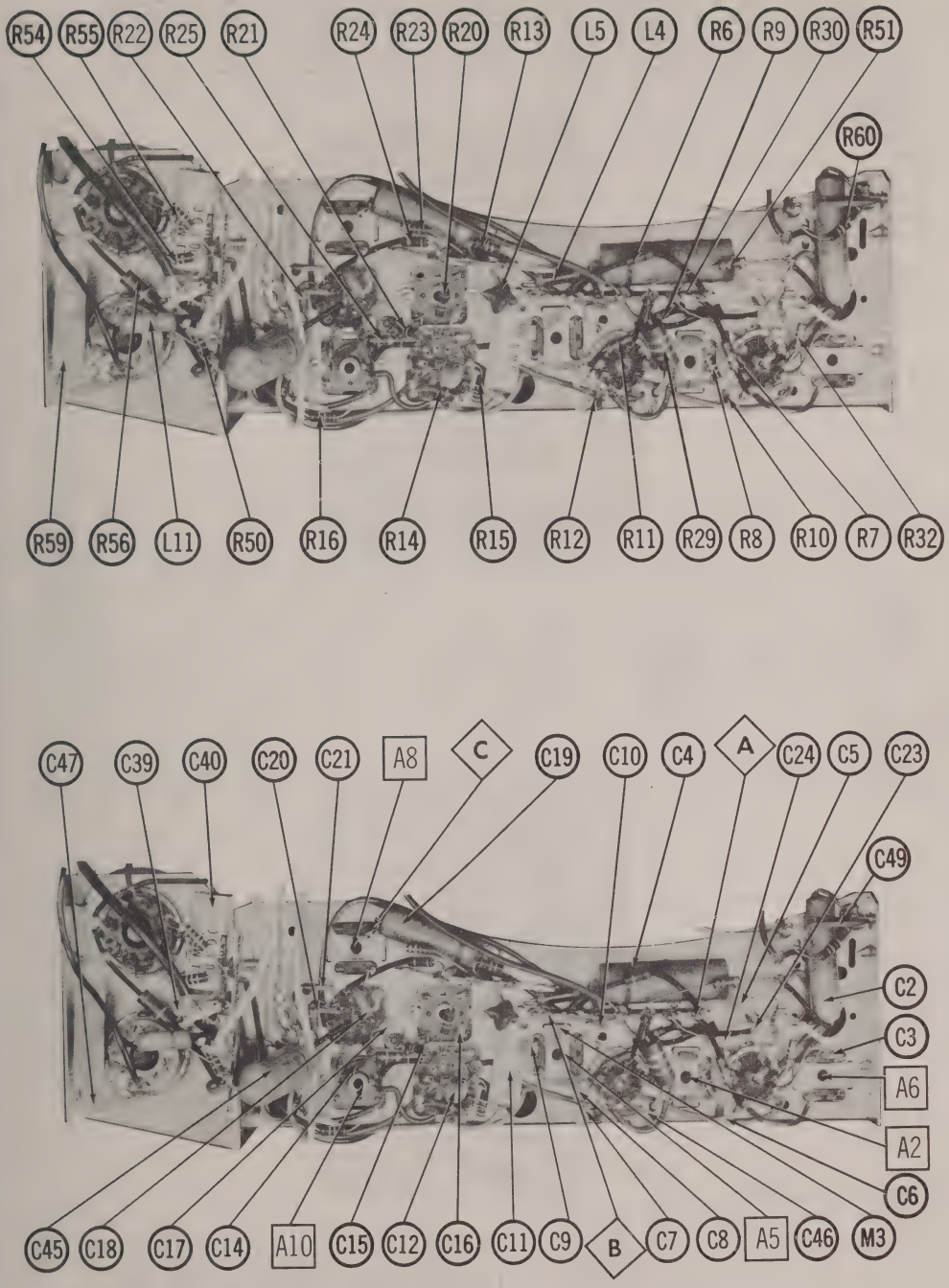
4.5MC TRAP ALIGNMENT

Tune in a strong TV signal and set Contrast at maximum. Adjust the Fine Tuning until a beat pattern is visible. Adjust A10 for MINIMUM beat interference.

FIG.1

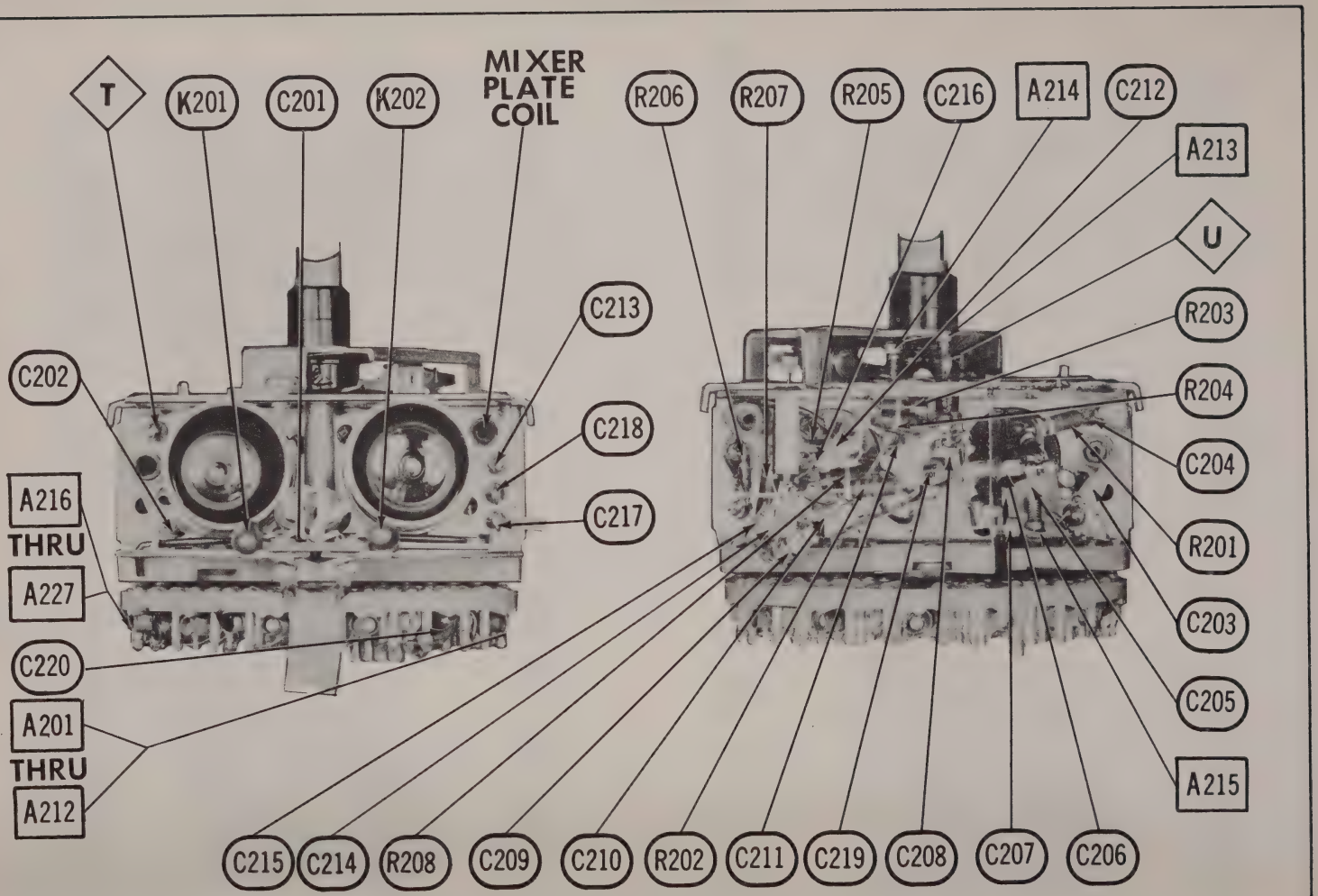


UPPER CHASSIS—TOP VIEW

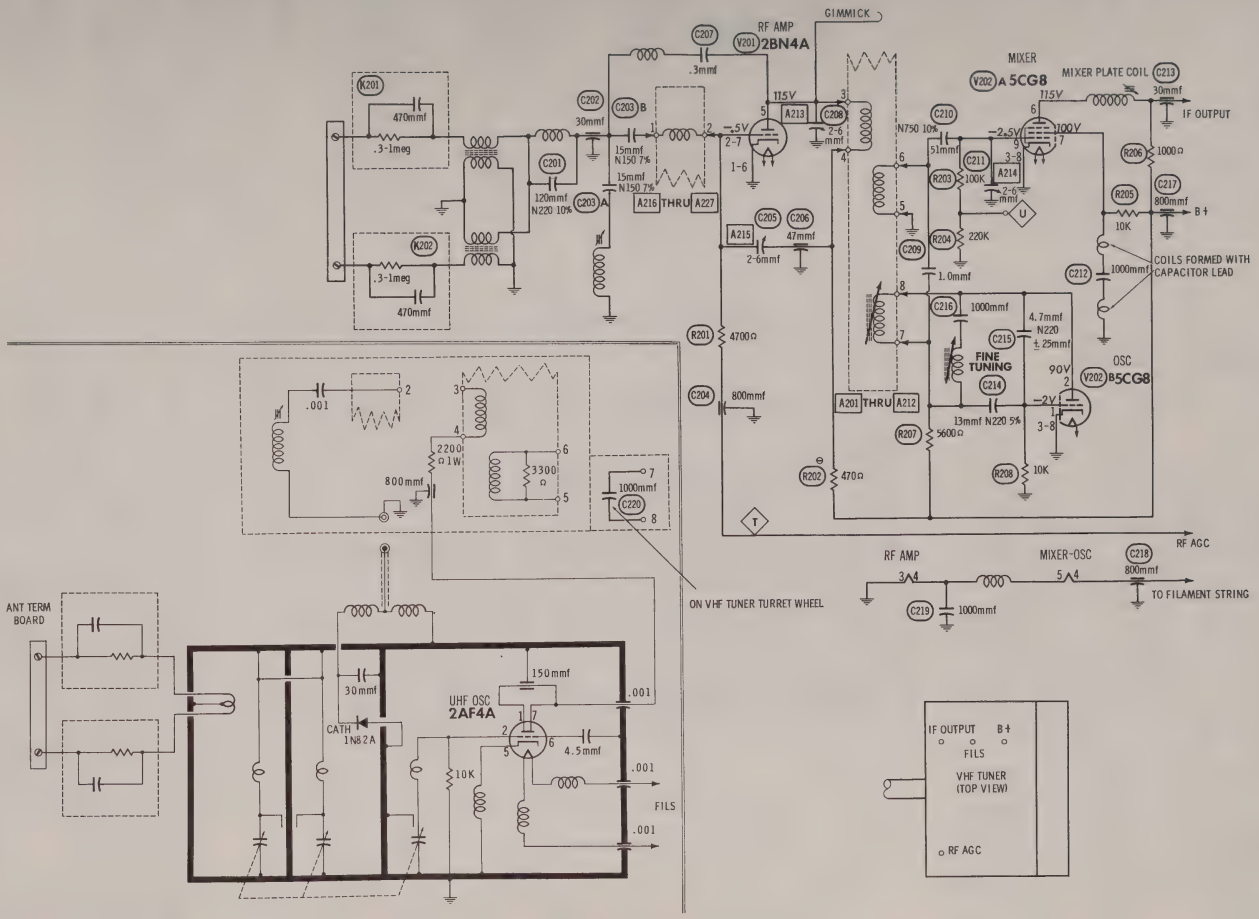


UPPER CHASSIS - BOTTOM VIEW

SET 558 FOLDER 1



VHF TUNER TA-50



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER TA-50, UHF TUNER TA-64, UHF ADAPTER COVER 31T3358-07

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	GENERAL ELECTRIC • RAYTHEON • SYLVANIA • TYPE
V1	1st Video IF Amp. - Vert. Mult.	5B8
V2	2nd Video IF Amp. - Sync Separator	5B8
V3	Video Output - Sound IF Amp.	6AW8A
V4	Audio Detector	3DT6
V5	Audio Output	12CA5
V6	Vert. Mult. - Vert. Output	12W6GT
V7	Horiz. Mult.	6CG7
V8	Horiz. Output	25DN6
V9	Damper	19AU4
V10	HV Rectifier	1X2B

PICTURE TUBE

ITEM No	REPLACEMENT DATA: TRUETONE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V11	17CFP4	17CFP4 ①	17CFP4 ①	17CFP4	17CFP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	200	150	EC-79	PR3-012	BBRT0129	XC3-20	WT320	CDBT-1015	TVA-3460
B	250	150							
C	10	150							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C3	.001		BPD-001	DD-103	BYA10X	CCD-102	B-210	5HK-D10
C4	.22 100V		P288N-22		CUB2P22	1DP-3-224	GEM-2022	2TM-P10
C5	.001		BPD-001	DD-102	BYA10X	CCD-102	B-210	5HK-D10
C6	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C7	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C8	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C9	4.7 10%		NPO-SL 4.7	TCZ-4R7	C10Y47C	CCTO-4R7	CNO-547	10TCC-Y47
C10	10 NPO 10%		NPO-DI 10	DTZ-10	C10QZC	CCTO-100	CNO-410	10TCC-Q10
C11	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C12	150		DI-150	DD-151	L10T15	CCD-151	B-315	10TS-T15
C13	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C14	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CNT-447	10TCU-Q47
C15	4.7 10%		NPO-SL 4.7	TCZ-4R7	C10Y47C	CCTO-4R7	CNO-547	10TCC-Y47
C16	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C17	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C18	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C19	.047 200V		P288N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	2TM-S47
C20	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C21	.01		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C22	.01		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C23	820		DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C24	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C25	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C26	.0068 400V 10%	(.0039) †	V6805-68-10%		BYA10D68	6DP-1-682	GEM-16268	6TM-D68
C27	.082 200V 10%				DPM8S8S2	6DP-4-823		6PS-S82
C28	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C29	.01 2000V						2HV-110	B1-S10
C30	100 10%		DI-1000	DD-101	L10T1	CCD-101	GP310	10TS-T10
C31	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CNT-447	10TCU-Q47
C32	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C33	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C34	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C35	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C36	.0056 400V 10%				DPM8S6D56	6DP-1-562		6PS-D56
C37	330 10%		1469-00033		5RST33	CM-19B-331K	MCB341	MS-333
C38	680 10%		1469-00068		5RST68	CM-19B-681K	MCJ349	MS-368
C39	470 10%		DI-470	DD-471	5RST47	CCD-471	GP347	10TS-T47
C40	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C41	.22 600V		P688N-22		CUB6P22	6DP-5-224	GEM-6025	6TM-P22
C42	.15 600V		P688N-15		CUB6P15	6DP-5-154	GEM-6015	6TM-P15
C43	56 4000V NI400 10%							
C44	56 2000V 10%				HVA20G56		2HY-458	
C45	.22 600V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C46	.001		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C47	.01		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C48	.22 600V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C49	.01 200V		P288N-01	DS-103	CUB4SI	4DP-1-103	GEM-411	4TM-S10

† Alternate Value

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	VC-80	B-80-S	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	K2S-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	UB-25	Power Off-On
R2A	1500Ω	½	VC-204	F1-7		† QJ-1287	# UE4147	Contrast
B	5meg	½		R2-83				Height
	4meg Stop			*				
R3A	1.5meg	½	VC-203	F1-64		† QJ-1291	▲ UE4146	Vert. Hold
B	2meg	½		R2-67		B17-141	PTA56R	Vert. Linearity
R4A	5meg	½	VC-205			TM4	Not Req.	Brightness
B	Shaft						PTA15L	
R5A	75K	½	VC-144	TT-35	A47-75K-S	B11-135	Not Req.	Horiz. Hold
B	Shaft			Not Req.	FKS-1/4	TM4		

† "CONCENTRIKIT" Equivalent: K-15 Kit with Base Elements and Shafts: B17-109, P17-028 (Panel) B11-141 *, R15-005 (Rear)

"CONCENTRIKIT" Equivalent: K-15 Kit with Base Elements and Shafts: B11-138, P17-028 (Panel) (Not available as a factory assembled unit). B11-139, R15-005 (Rear)

■ "STA-LOC" Equivalent: FB15R, RU56L *, C6750A, 1K525.

▲ "STA-LOC" Equivalent: FA15SL, RU36L, C6750A, 1K525.

* Use 1meg Resistor in series with Right hand terminal, viewed shaft end terminals down.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise noted.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R6	1meg			
R7	10K			
R8	47K			
R9	150Ω			
R10	56Ω			
R11	150Ω			
R12	180Ω			
R13	12K			
R14	2.7meg			
R15	3.3meg			
R16	15K			
R17	3300Ω 7W	PW7-3300	TW-SQ-3300	
R18	120K			
R19	27K			
R20	100K			
R21	100K			
R22	680K			
R23	680K			
R24	8200Ω			
R25	680Ω			
R26	27K 1W			
R27	150Ω			
R28	120Ω			
R29	12K 2W			(12K 1W) *
R30	68K			
R31	18K 2W			(18K 1W) *
R32	100K			
R33	470K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R34	180K			
R35	100K			
R36	100K			
R37	100K			
R38	1.8meg			
R39	8meg			
R40	220Ω			
R41	1meg			
R42	4700Ω			
R43	1meg			
R44	220K			
R45	1meg			
R46	82K			
R47	12K			
R48	1200Ω			
R49	82K			
R50	47K			
R51	220Ω			
R52	390K			
R53	3300Ω			
R54	390K			
R55	47K			
R56	1200Ω 1W			
R57	6800Ω			
R58	4.7Ω			Fusible #F-10
R59	12Ω 7W	PW7-12	TW-SQ-12	
R60	470K			

† Truetone Part Number

* Alternate

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1A	1st Video IF	L-179	TV-132 †	6232 †	RTC-8559 †	T209 †	† Disregard Secondary.
B	41.25MC Trap						
L2	2nd Video IF	L-171				TF21	
L3	3rd Video IF	L-170				TF20	
L4	RF Choke (17uh)	L-133	TV-192	6152	RTC-8584	T300	
L5	Peaking (800uh)	L-128	TV-207	6156	RTC-8588	T328	① Part #L-175 may be used in some versions.
L6A	4.5MC Trap	L-154 ①		1482 IFT	RTC 9056	T253	② Wound on 390Ω Resistor.
B	1st Sound IF						③ Wound on 27K Resistor.
L7	Peaking	L-127 ②					④ Part #L-176 may be used in some versions.
L8	Peaking	L-126 ③					⑤ IRC Part #CLA.
L9	2nd Sound IF	L-167 ④				TA232	
L10	Quadrature	L-110A	TV-154	1481	RTC-8606	T248	
L11	RF Choke (10uh)	L-59 ⑤	BC-566	4012	RTC-8522	T860	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.	NOTES
L12	Horiz. Stabilizer	L-132A	TV-165	6210	RTC-8622	HS-7	WLC-3	T105	

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ℃/s	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L13	.250A	20Ω	.7 Hy.	FC-9	C-4084	C-2343	28C44	C-27X	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Output	TR-36A	A-2822 ①		26T71 ①	A-117X	
T2	Yoke (Horiz. 25MH) (90°) (Vert. 34MH) Rear Cover and Centering Device	L-135A		DY-32A ②③	Y-45 ③	Y-45 & NW23 YC-112	
T3	Horiz. Output	TR-57		HO-266 ①*	FLY-149 ①	D-625 *	

① Drill new mounting hole(s).
② Remove jumper across Yoke Plug Pins #1 and #6.
③ Connect Yoke #4 to Yoke Plug Pin #2; Yoke #2 and #7 to Plug Pin #3; Yoke #3 to Plug Pin #4; Yoke #6 to Plug Pin #6; Yoke #4 to Plug Pin #7; Yoke #5 and #8 to Plug Pin #8.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

ORIGINAL TERMINAL CONNECTIONS	Merit Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5		1	1	5
6		2	2	6
7		3	3	7
8		4	4	8

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	4500Ω	3-4Ω	AT-32	A-3026	A-3877 ①	24S48	S-6X	① Drill new mounting hole(s).

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: TRUETONE PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	SPK-49	4A07	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA
K1	Sync Sep. Grid	25mmf, 270mmf, .01mfd, 220K, 2.2meg	CC95	Aerovox PA-533 Centralab PC-263 Sprague ST-3

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: TRUETONE PART No.	RCA PART No.	SIDNEY TARZIAN PART No.	NOTES
M1	.280A	SR-8 *	1N1763 +	350 *	* Selenium Type + Silicon Type

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: TRUETONE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M2		SR-13	8GC1		Horiz. AFC Diode, Dual Selenium, Common Cathode Type
M3		SC-6 (1N295 or CK-706A)		1N295	Video Detector Crystal Diode

MISCELLANEOUS

ITEM No.	PART NAME	REPLACEMENT DATA: TRUETONE PART No.	NOTES
M4	Tuner	TA-50	VHF Complete
	Tuner	TA-54	UHF (Conversion Unit)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Mask	MP-230	
Knob-UHF		
Channel Selector	K-269	Model 2DC3221
Knob-UHF		
Channel Indicator	K-270	Model 2DC3221
Knob-VHF		
Channel Selector	K-351	
Knob-Fine Tuning	K-201	
Knob-Volume	K-353	
Knob-Contrast, Vert. Hold	K-352	
Foot-Cabinet	MP-76	
Cabinet Top	CA-41T	
Cabinet Bottom	CA-41B	

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

TRUETONE MODELS 2DC3220, 2DC3221

FOLDER 1

VHF TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •		RAYTHEON •	SYLVANIA •	
V201	RF Amplifier	2BN4A	V202	Mixer - Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120 N220 10%					*		10TCR-T12
C202	30							
C203A	15 N150 7%					*		10TCP-Q15
B	15 N150 7%					*		10TCP-Q15
C204	800		EF-001	MFT-1000		CCF-102		
C205	2-6			829-6		VC-3	CT552	
C206	47		EF-000050	MFT-50				
C207	.3							
C208	2-6			829-6		VC-3	CT552	
C209	1		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C210	51 N750 10%		N750-DI 47	TCN-51	C10Q51U	CCTN-470	CN7-447	10TCU-Q47
C211	2-6			829-6		VC-3	CT552	
C212	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C213	30							
C214	13 N220 5%					*		
C215	4.7 N220 ±.25mmf					*		
C216	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C217	800		EF-001	MFT-1000		CCF-102	CT280A	
C218	800		EF-001	MFT-1000		CCF-102	CT280A	
C219	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C220	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	4700Ω			Note 1	R205	10K			
R202	470Ω				R206	1000Ω			
R203	100K				R207	5600Ω			
R204	220K				R208	10K			

Note 1. Some versions may use 1000Ω in this application.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K201	Antenna Isolation	470mmf, .3-1meg		Centralab RC-471 Sprague AC1-1
K202	Antenna Isolation	470mmf, .3-1meg		Centralab RC-471 Sprague AC1-1

VHF TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment. The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A213, A214, A215..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Set the Fine Tuning to the center of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

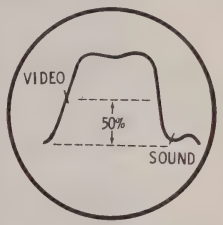


FIG. 201

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Connect the negative lead of a 4.5 volt bias supply to point (T). Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U). Low side to chassis.	A213, A214, A215	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A215 to obtain MINIMUM response on the scope. Restore bias.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by compressing or expanding coil turns.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

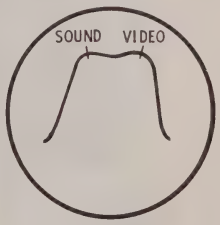
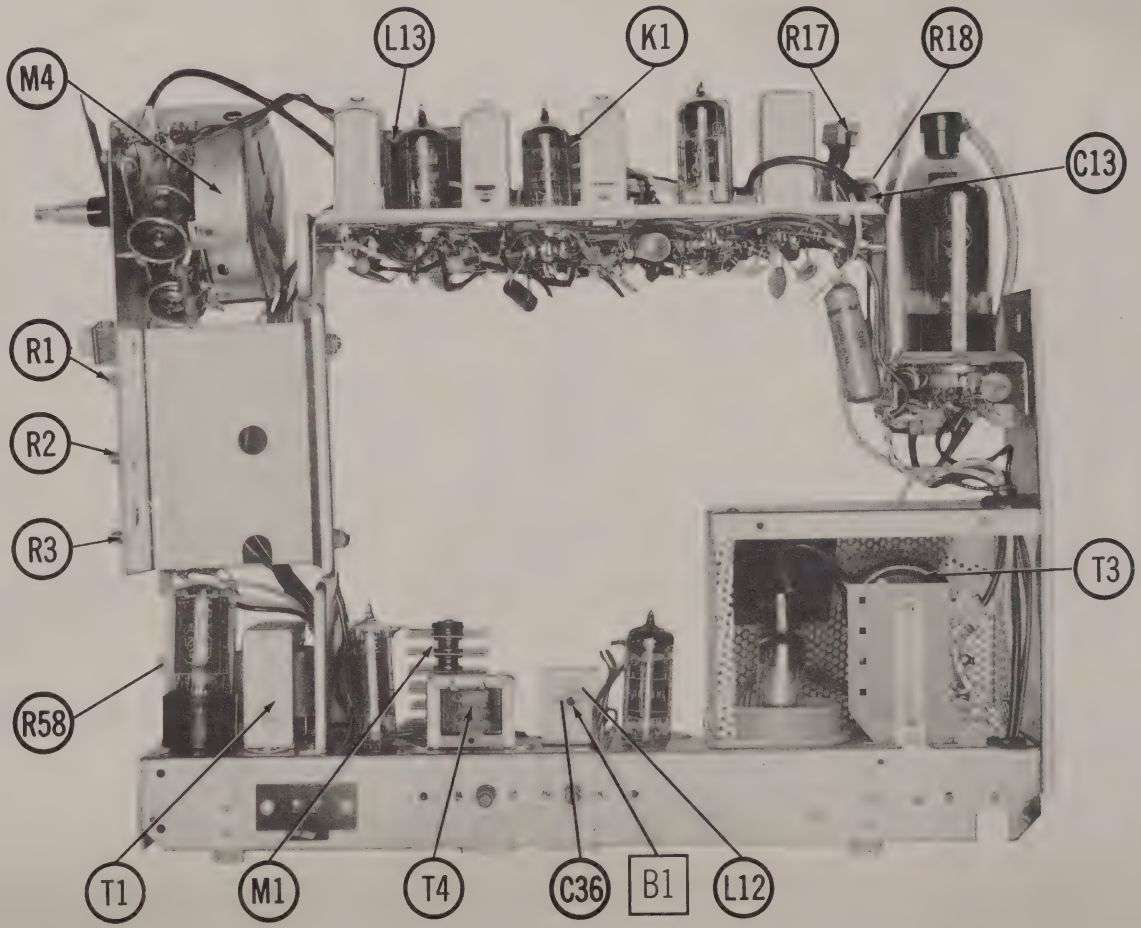


FIG. 202



CHASSIS - REAR VIEW

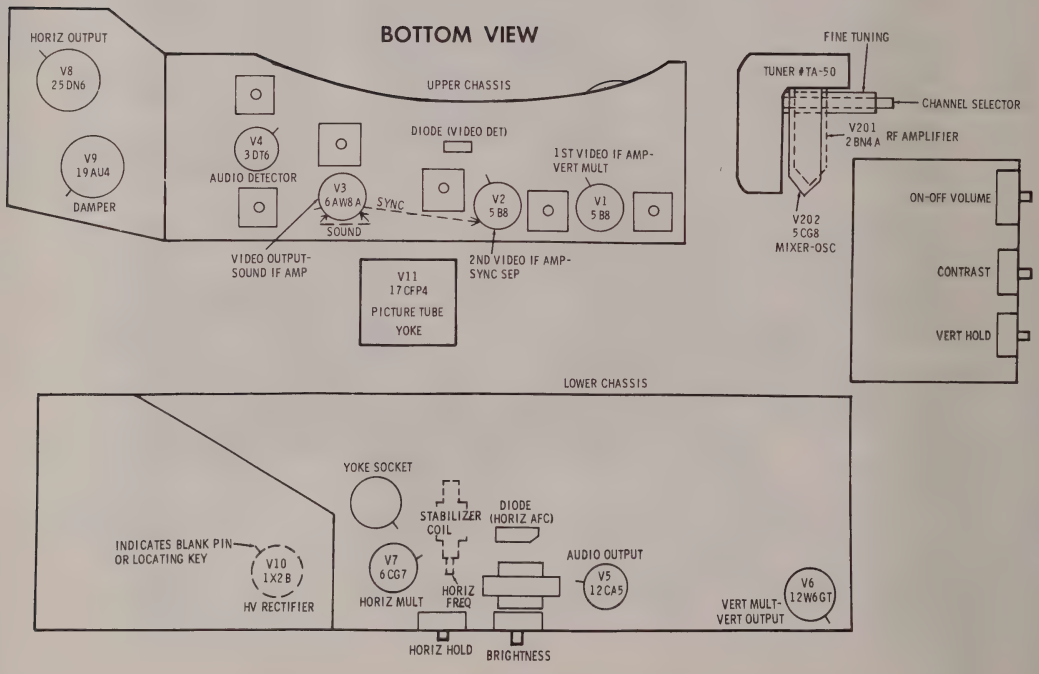
LOWER CHASSIS - BOTTOM VIEW

RESISTANCE MEASUREMENTS

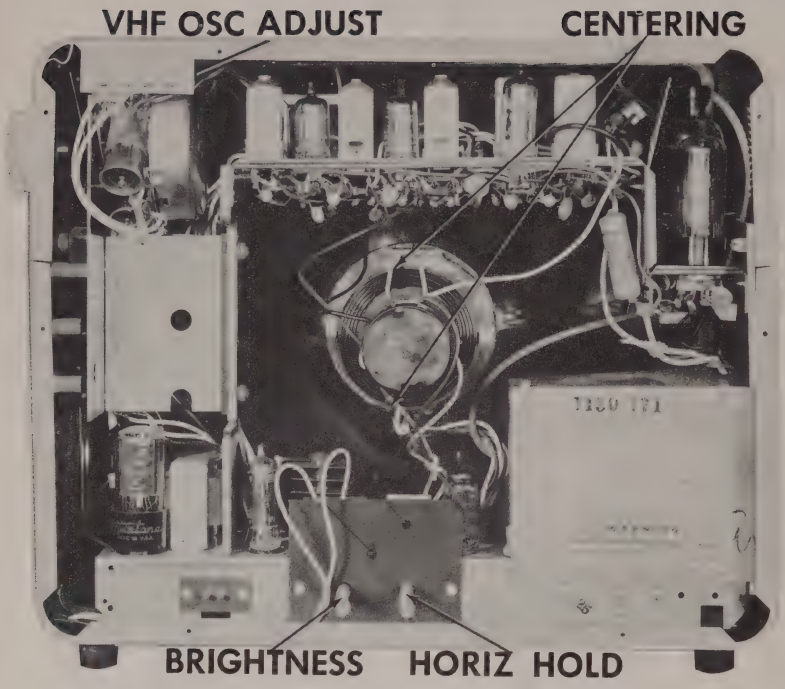
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	5B8	0Ω	•1meg	•†2.2meg	25Ω	21Ω	1meg	56Ω	†170Ω	†170Ω
V2	5B8	0Ω	2.2meg	†12K	21Ω	17Ω	.1Ω	180Ω	†170Ω	†170Ω
V3	6AW8A	0Ω	100K	†100K	12Ω	17Ω	•35Ω	1.6meg	†20Ω	†3300Ω
V4	3DT6	20Ω	680Ω	12Ω	10Ω	†710K	†7200Ω	680K		
V5	12CA5	120Ω	•1000Ω	25Ω	35Ω	NC	†170Ω	†235Ω		
V6	12W6GT	NC	45Ω	†270Ω	†20Ω	•2.3meg	TP	35Ω	0Ω	
V7	6CG7	†12K	2.8meg	1200Ω	45Ω	50Ω	†47K	•140K	1200Ω	NC
V8	25DN6	NC	50Ω	0Ω	NC	440K	NC	70Ω	†1200Ω	TOP CAP †14Ω
V9	19AU4	NC	NC	†470K	NC	†20Ω	NC	100Ω	82Ω	
V10	1X2B	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP †450Ω
V11	17CFP4	6Ω	6Ω	Pin 6 †27K	Pin 10 †27K	Pin 11 •500K	Pin 12 10Ω			
V201	2BN4A	0Ω	1meg	0Ω	2Ω	†710Ω	0Ω	TP		
V202	5CG8	10K	†5800Ω	0Ω	6Ω	2Ω	†1200Ω	†10K	0Ω	320K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
ǂ MEASURED FROM PIN 3 OF V9.

NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV signal, preferably with a test pattern.

Set the Horizontal Hold Control to the center of its range.

Adjust the Horizontal Frequency Slug (B1) until the picture synchronizes horizontally. The picture should stay locked in when the set is switched off channel and back again.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 5 push-on type knobs on side of cabinet, also 2 UHF knobs on some models .
2. Remove 10 screws holding the top section of the cabinet.
3. Lift section straight up.
4. Remove 6 chassis bolts.
5. Unsolder speaker leads, disconnect yoke plug and picture tube socket.
6. Pull chassis straight out.

PICTURE TUBE REMOVAL

It is necessary to remove chassis for picture tube removal.

PHOTOFACT® Folder with CIRCUITRACE®

**WESTINGHOUSE CHASSIS
V-2414-1, V-2414-2**

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

WESTINGHOUSE CHASSIS
V-2414-1, V-2414-2

MODEL H-T3560U

WESTINGHOUSE CHASSIS
V-2414-1, V-2414-2

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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MODEL H-T3560U

CAUTION

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRADE NAME	WESTINGHOUSE MODELS	CHASSIS	VHF TUNER	UHF TUNER
	H-K3810, H-K3811, H-K3850, H-K3851, H-K3852, H-T3560, H-T3561, H-T3562, H-T3563	V-2414-1	470V055H02	
	H-K3810U, H-K3811U, H-K3850U, H-K3851U, H-K3852U, H-T3560U, H-T3561U, H-T3562U, H-T3563U	V-2414-2	470V056H02	472V034H04
MANUFACTURER	Westinghouse Electric Corp., Television & Radio Div., Metuchen, N. J.			
TYPE SET	Television Receiver			
TUBES	VHF - Sixteen, UHF Seventeen	RATING	170 Watts, 1.3 Amp. @ 117 Volts AC (With UHF Tuner)	
POWER SUPPLY	105 - 120 Volts AC, 60 Cycle			
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)			

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 3 push-on type knobs from the front. Remove 6 screws holding trim. Tilt glass out and remove.

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

AGC

The AGC may be varied by means of an AGC Control. (See "Tube Placement Chart" for location.)

FOCUS

No provision is made to vary the focus on this receiver.

SYNC STABILITY

Sync stability may be varied by means of a Sync Stability Control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Stabilizer Coil Slug (B2). (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by adjusting a metallic sleeve, located between the yoke and the picture tube neck, in or out of the yoke.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of LA189

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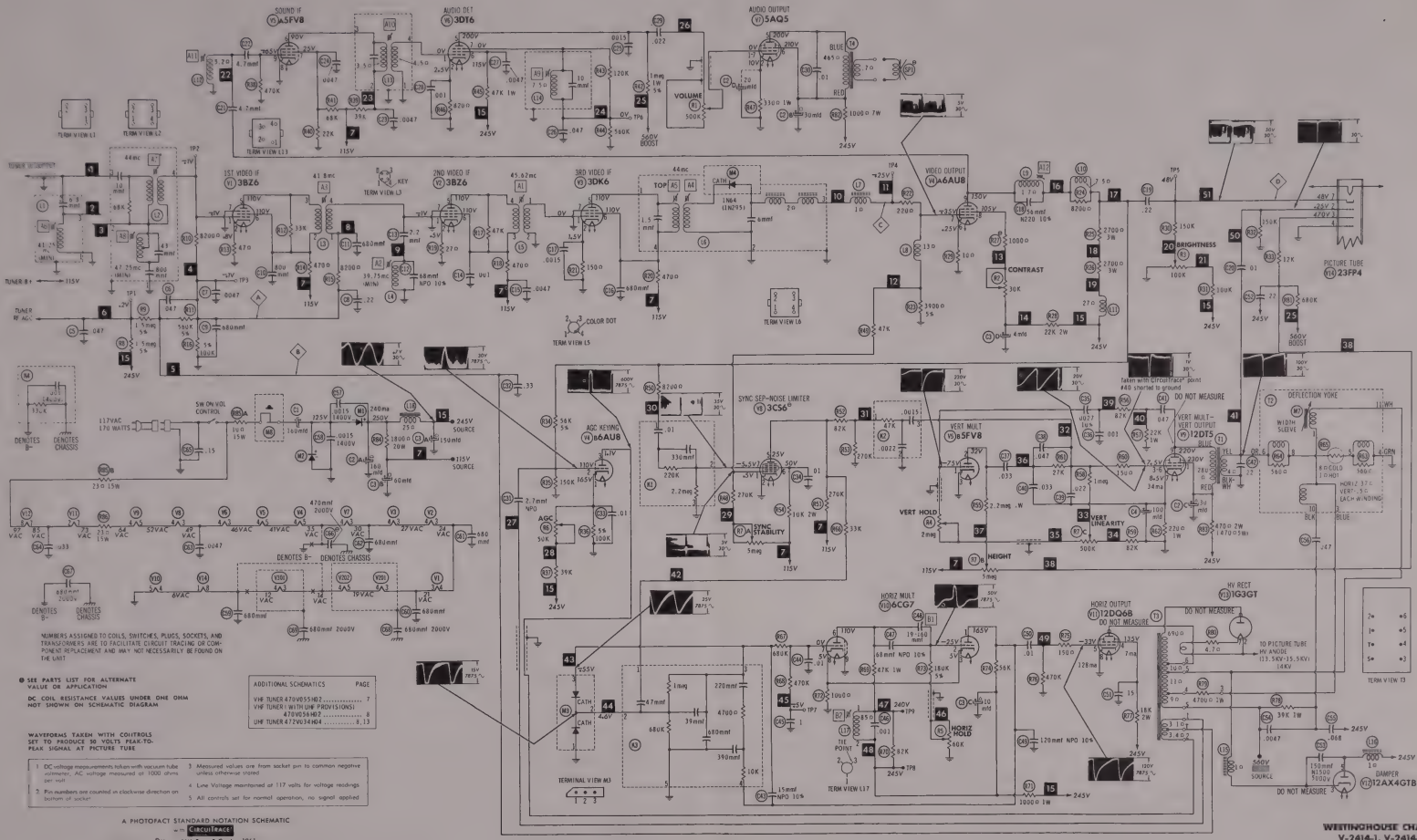
SET 558 FOLDER 2

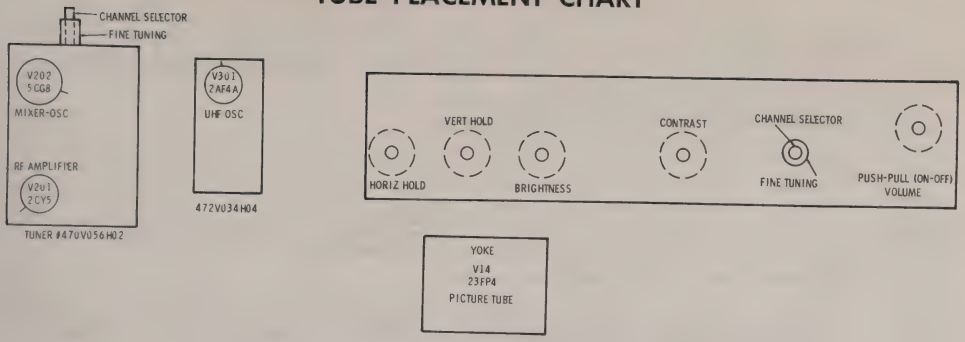
WESTINGHOUSE CHASSIS
V-2414-1, V-2414-2

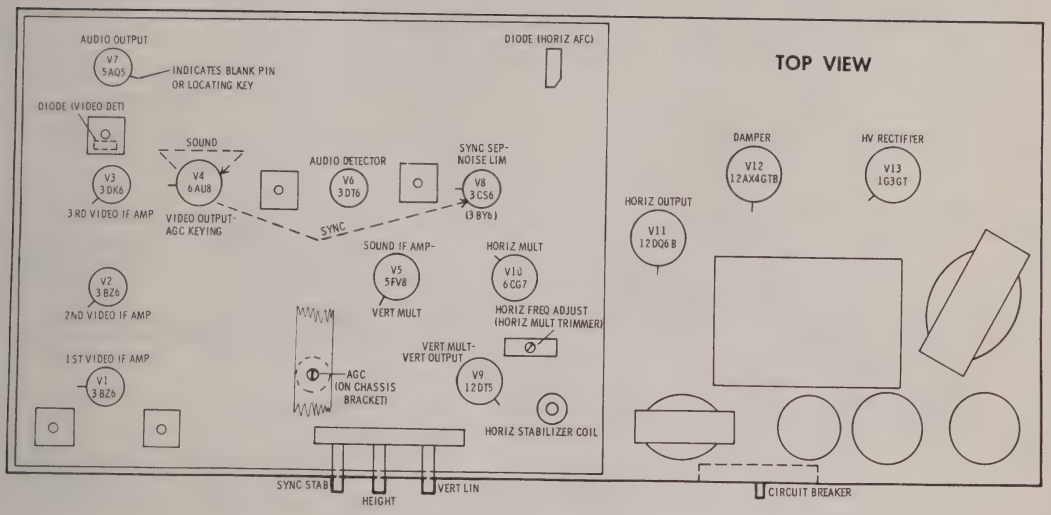
WESTINGHOUSE CHASSIS
V-2414-1, V-2414-2

SET 558 FOLDER 2


SOUND IF V5 6SF8
AUDIO DET V6 3DT6
AUDIO OUTPUT V7 5AQ5
VOLUME
1ST VIDEO IF V1 3BZ6
2ND VIDEO IF V2 3BZ6
3RD VIDEO IF V3 3DK6
VIDEO OUTPUT V4 6AU8
CONTRAST
BRIGHTNESS
PICTURE TUBE V16 23FP4
SYNC SEP–NOISE LIMITER V8 3CS6
AGC KEYING V9 6AU8
VERT MULT V5 6SF8
VERT MULT–VERT OUTPUT V9 12DT5
VERT HOLD
VERT LINEARITY
HEIGHT
HORIZ MULT V10 6CG7
HORIZ OUTPUT V11 12DQ68
HV RECT V13 1G3GT
DAMPER V17 12AX4GTB
SYNC STABILITY
HORIZ HOLD
DEFLECTION YOKE
SW ON-VOL CONTROL
117VAC 170 WATTS
DENOTES B+
DENOTES CHASSIS
TERM VIEW L1
TERM VIEW L2
TERM VIEW L3
TERM VIEW L5
TERM VIEW L6
TERM VIEW L17
TERM VIEW M3
TERM VIEW T3
DO NOT MEASURE
TO PICTURE TUBE HV ANODE (13.5KV-15.5KV) 14KV
245V SOURCE
115V SOURCE
560V BOOST
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
ADDITIONAL SCHEMATICS PAGE
VHF TUNER 470V055MD2 7
VHF TUNER (WITH UHF PROVISIONS) 470V056MD2 8
UHF TUNER 472V034MX4 9,13
1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
CIRCUITRACE
© Howard W. Sams & Co., Inc. 1961
WESTINGHOUSE CHASSIS V-2414-1, V-2414-2

TUBE PLACEMENT CHART





TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

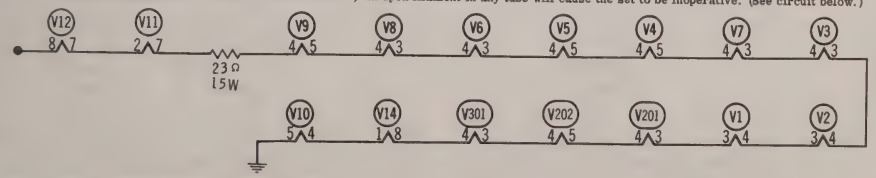
POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, Rectifiers M1, M2

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V14
No vertical deflection V5, V9
Poor vert. linearity or foldover V5, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, M1, M2
Vert. off freq. V5, V9
Horiz. off freq. Diode (Horiz. AFC), V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V5, V6, V7
Overloaded picture V4

SYNC FAILURE
No vert. sync V8
No horiz. sync V8
No vert. or horiz. sync V8

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an isolation transformer TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 4 volt bias supply to point (A). Positive to chassis.
Connect the negative lead of a 2.5 volt bias supply to point (B). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.
Use only enough sweep generator output to provide a usable pattern on scope.
Detune A5, A7 and A8.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001mfd	High side to pin 1 (grid) of 1st Video IF. Low side to chassis.	Not used	45.62MC (Unmod)	Any non-interfering channel	USE VTVM DC probe thru 47K to point (C). Common to chassis. (Across Video Det. load)	A1	Adjust for maximum negative voltage.
2.	"	"	"	39.75MC	"	"	A2	Adjust for MINIMUM deflection.
3.	"	"	"	41.8MC	"	"	A3	Adjust for maximum deflection.
4.	"	"	44.0MC (10MC Swp)	44.0MC	"	USE SCOPE Vert. Amp. thru 47K to point (C). Low side to chassis.	A4	Adjust to peak at 44.0MC.
5.	"	"	"	45.75MC 44.75MC 42.25MC 41.25MC 39.75MC	"	"	A5	Adjust until high frequency peak falls at 44.75MC. Retouch A4 to obtain a symmetrical double peak response similar to Fig. 1.
6.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	41.25MC	"	"	A6	Detune by turning several turns clockwise. Then adjust to place marker in trap notch as in Fig. 2.
7.	"	"	"	44.0MC 45.75MC	"	"	Mixer Plate Coil & A7	Adjust Mixer Plate Coil for maximum amplitude at 44.0MC. Adjust A7 to obtain a symmetrical response which rocks about 44.0MC. The 45.75MC marker should fall at about 50% on curve as in Fig. 2.
8.	"	"	"	47.25MC	"	"	A8	Adjust to place marker in 47.25MC trap notch as in Fig. 2.

SOUND IF ALIGNMENT

Connect an AC VTVM or scope across the Volume control.
Inject a strong 4.5MC FM signal at point (C) (across Video Det. load) thru a .001mfd capacitor. Adjust A9 for maximum output.
Reduce the signal strength to the lowest level that will produce an indication and adjust A10 and A11 for maximum output.
Retouch A9, A10, A11.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.001mfd	High side to point (C). Low side to chassis. (Across Video Det. load)	4.5MC (Unmod)	Any non-interfering channel	AC probe to point (D). Common to chassis.	A12	Adjust for MINIMUM AC voltage.

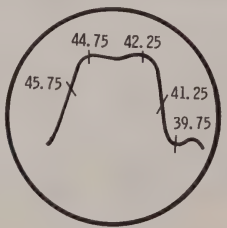


FIG. 1

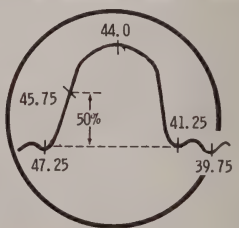
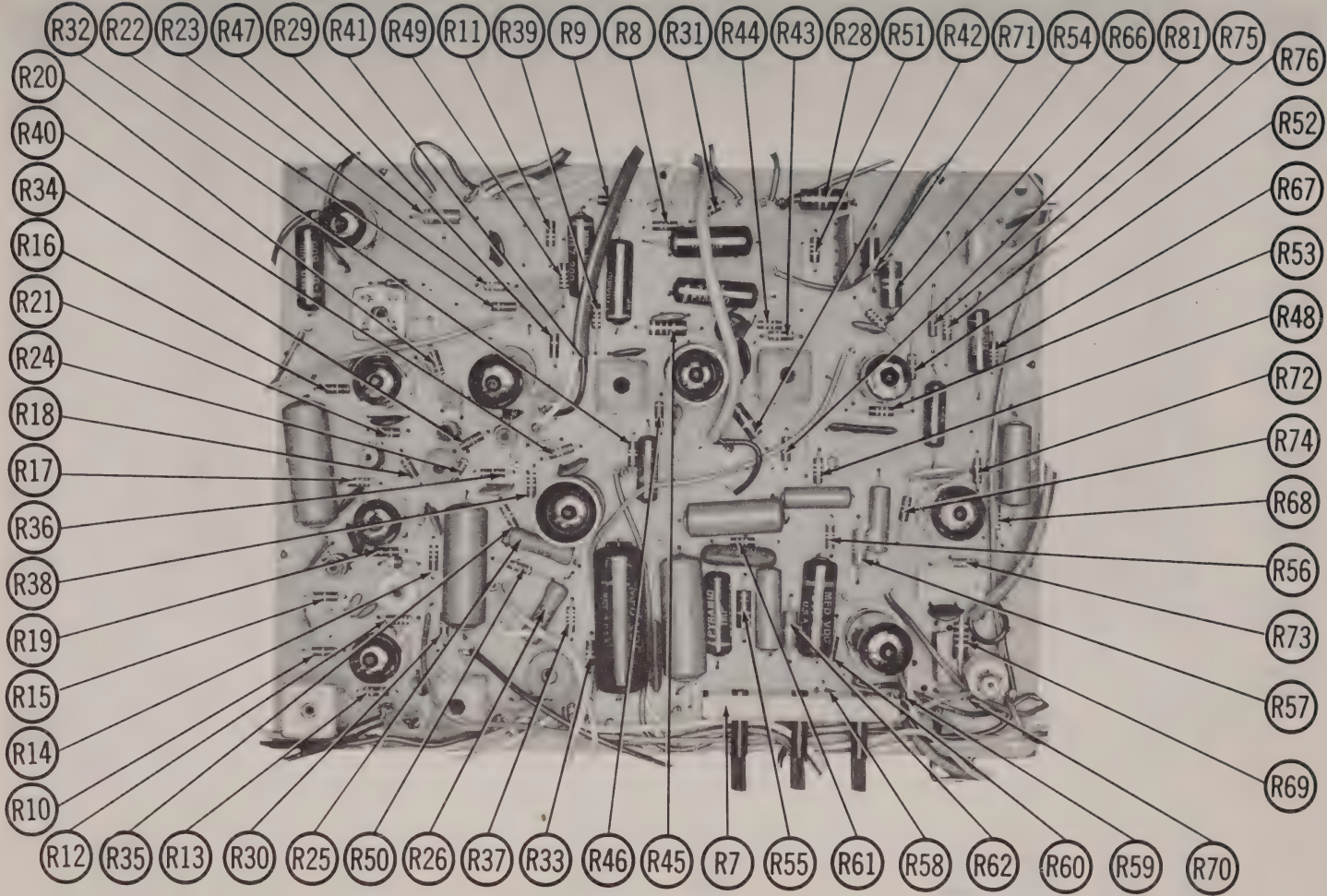


FIG. 2



PRINTED BOARD - RESISTOR IDENT.

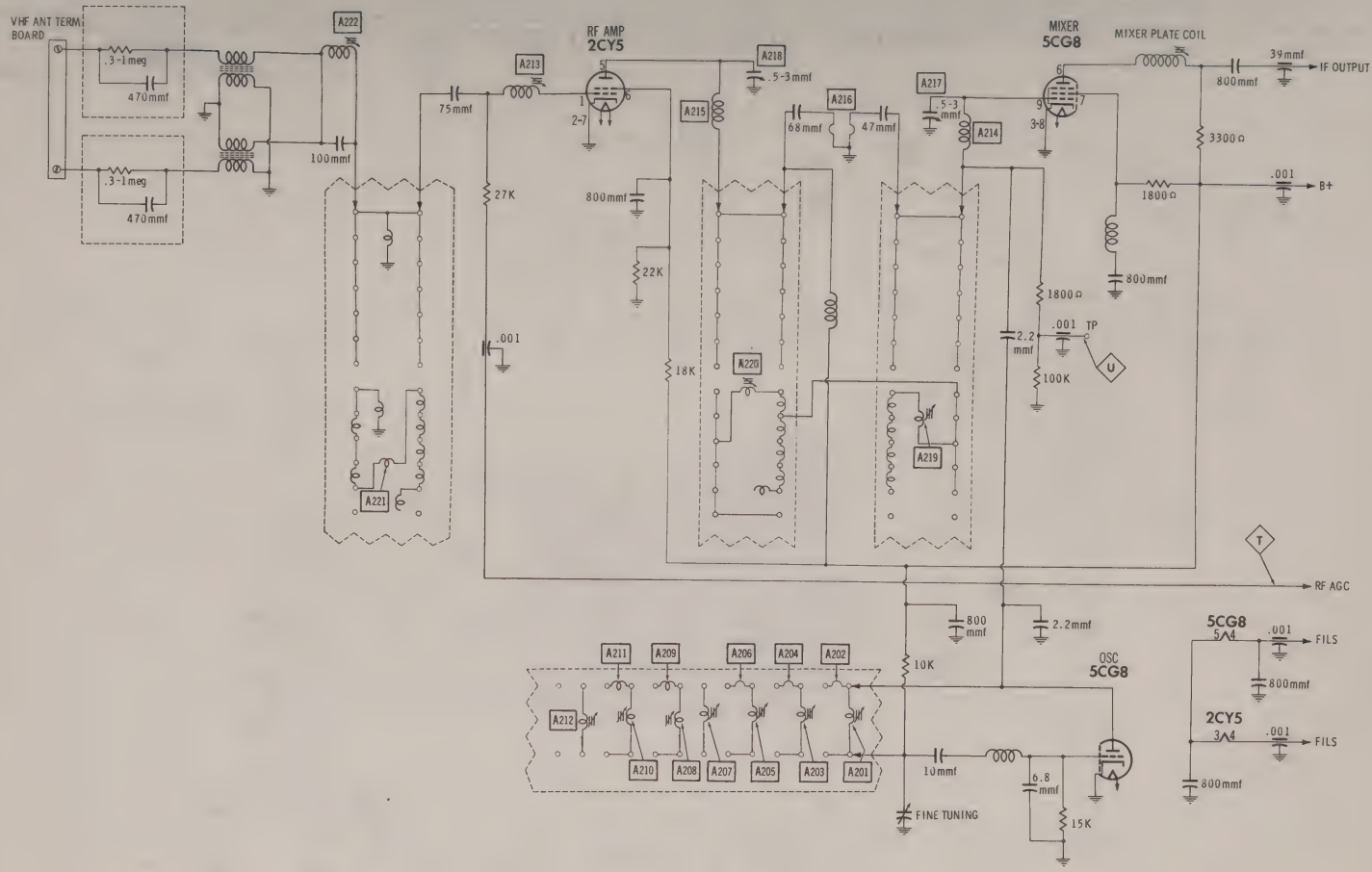
A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

WESTINGHOUSE CHASSIS
V-2414-1, V-2414-2

FOLDER 2



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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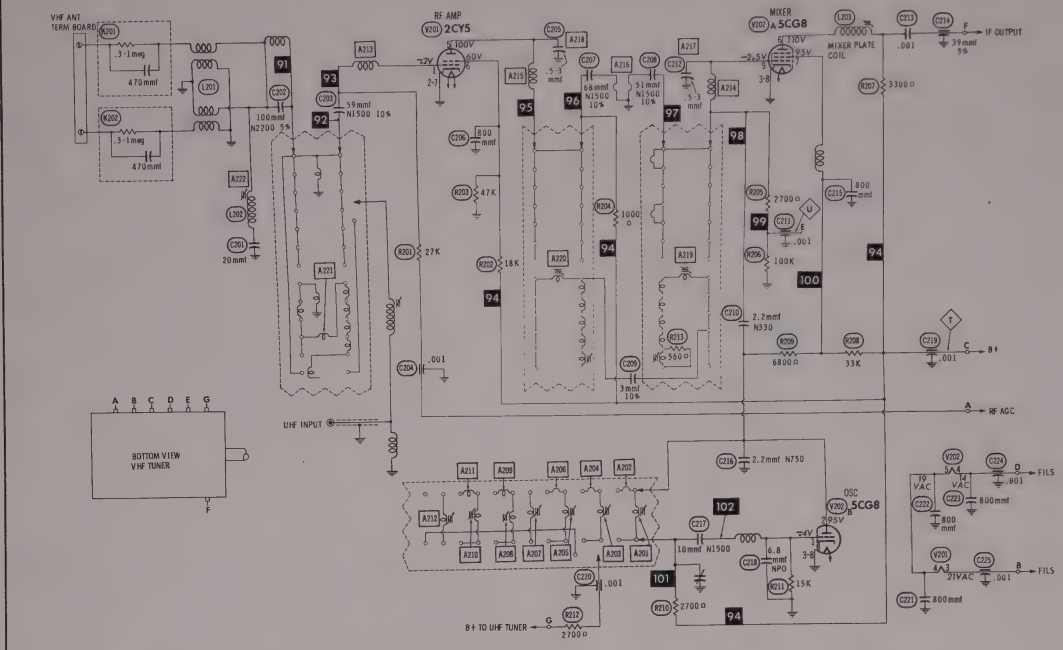
VHF TUNER 470V055H02

WESTINGHOUSE CHASSIS V-2414-1, V-2414-2



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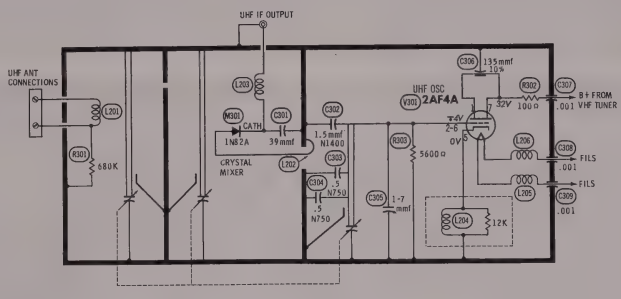
VHF TUNER (WITH UHF PROV.) 470V056H02



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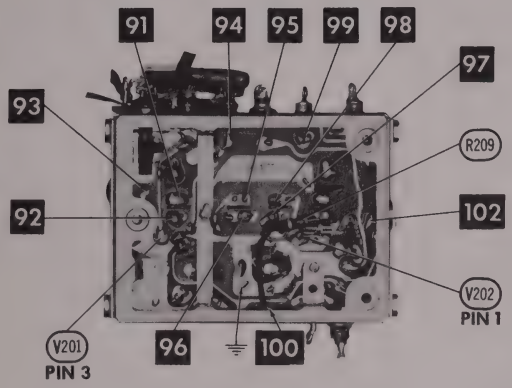
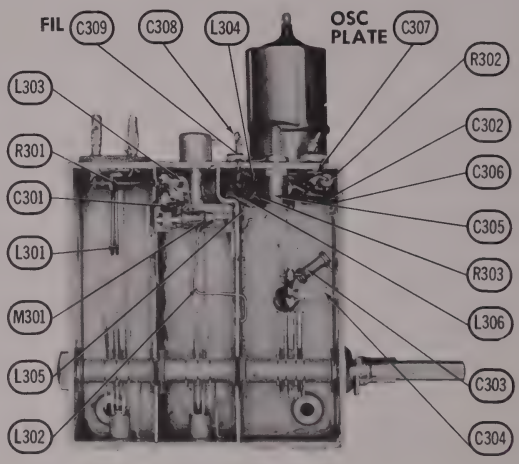
UHF TUNER 472V034H04

A Howard W. Sams CIRCUITRACE Photo



VHF TUNER (WITH UHF PROV.)
470V056H02 - BOTTOM VIEW



UHF TUNER 472V034H04

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	MODEL NO. H-K3810.U	H-K3811.U	H-K3850.U	H-K3851.U	H-K3852.U	H-T3560.U	H-T3561.U	H-T3562.U	H-T3563.U
Safety Glass, Tinted	630V008H01	X	X	X	X	X	X	X	X	X
Mask	610V021H01	X	X	X	X	X	X	X	X	X
Knob, Channel Selector	550V176H02	X	X	X	X	X				
Knob, Channel Selector	550V100H05						X	X	X	X
Knob, UHF Channel Selector	*550V050H01	X	X	X	X	X	X	X	X	X
Knob, On-Off Vol., Contrast	550V101H07						X	X	X	X
Knob, On-Off Vol., Contrast	550V101H08	X	X	X	X	X				
Knob, Fine Tuning	559V047H01	X	X	X	X	X	X	X	X	X
Knob, Horiz., Vert., Bright.	550V044H01	X	X	X	X	X	X	X	X	X
Dial, UHF	*550V029H09	X	X	X	X	X	X	X	X	X

* UHF Only

CABINET PART NO.	MODEL NO.	CABINET PART NO.	MODEL NO.
516V267H01	H-K3810	516V272H06	H-K3852U
516V267H03	H-K3810U	510V011H60	H-T3560
516V267H02	H-K3811	510V011H61	H-T3560U
516V267H04	H-K3811U	510V011H62	H-T3561
516V272H01	H-K3850	510V011H63	H-T3561U
516V272H04	H-K3850U	510V011H66	H-T3562
516V272H02	H-K3851	510V011H67	H-T3562U
516V272H05	H-K3851U	510V011H64	H-T3563
516V272H03	H-K3852	510V011H65	H-T3563U

UHF TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC / RAYTHEON / SYLVANIA — USE	TYPE
V301	UHF Osc.	2AF4A

FIXED CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C301	39			NPO-DI 39	DTZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C302	1.5	N1400	#690V013H43				*		
C303	5	N750	#690V013H44						
C304	5	N750	#690V013H44						
C305	1-7		#690V013H03		829-7				
C306	135	10%	#690V013H42						
C307	001			EF-001	MFT-1000		CCF-102	CT280A	
C308	.001			EF-001	MFT-1000		CCF-102	CT280A	
C309	001			EF-001	MFT-1000		CCF-102	CT280A	

Westinghouse Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R301	680K			
R302	100Ω			
R303	5600Ω			

COILS (RF-IF)

ITEM No.	USE	Westinghouse PART No.	NOTES
L301	Ant.	690V013H46	
L302	RF Choke	690V013H47	
L303	IF Coupling	690V013H48	
L304	RF Choke	690V013H49	
L305	Fil. Choke	690V013H50	
L306	Fil. Choke	690V013H50	

SIGNAL DIODES

ITEM No.	OBSG. TYPE	REPLACEMENT DATA: Westinghouse PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M301	1N82A	V-8634-3		1N82A	UHF Mixer

VHF TUNER PARTS LIST AND DESCRIPTIONS

470V056H02

TUBES

ITEM No.	GENERAL ELECTRIC / RAYTHEON / SYLVANIA — USE	TYPE
V201	R.F. Amp.	2CY5
V202	Mixer - Osc.	5CG8

FIXED CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	20			NPO-DI 20	DTZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C202	100	N2200 5%	#690V013H10		TCL-100		*		
C203	59	N1500 10%	#690V013H55				*		
C204	001			EF-001	MFT-1000		CCF-102	CT280A	
C205	5-3				829-3		CV-1	CT565	
C206	800			DI-830	DD-801	L10T8	CCD-801	GP382	10TS-T80
C207	68	N1500 10%	#315V016A80				*		
C208	51	N1500 10%	#690V004H70				*		
C209	3	10%		NPO-SI 3.0	TCZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-V33
C210	2.2	N330	#317V003A29				*		
C211	.001			EF-001	MFT-1000		CCF-102	CT280A	
C212	5-3				829-3		CV-1	CT565	
C213	001			(800) †	DD-801	BYA10DI	CCD-102	B-20	5HK-DI0
C214	39	5%	#690V013H79						
C215	800			DI-830	DD-801	L10T8	CCD-801	GP382	10TS-T80
C216	2.2	N750	#317V002A29					CN7-522	10TCU-V22
C217	10	N1500	#690V013H09		TCL-10		*		
C218	6.8	NPO		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C219	001			EF-001	MFT-1000		CCF-102	CT280A	
C220	001			EF-001	MFT-1000		CCF-102	CT280A	
C221	800			DI-830	DD-801	L10T8	CCD-801	GP382	10TS-T80
C222	800			DI-830	DD-801	L10T8	CCD-801	GP382	10TS-T80
C223	800			DI-830	DD-801	L10T8	CCD-801	GP382	10TS-T80
C224	.001			EF-001	MFT-1000		CCF-102	CT280A	
C225	001			EF-001	MFT-1000		CCF-102	CT280A	

Westinghouse Part Number † Alternate
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

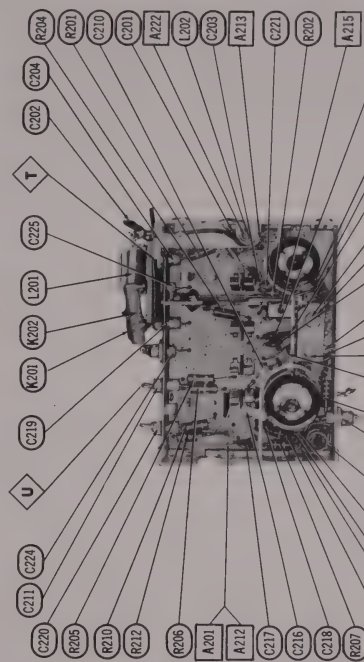
ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	27K			
R202	18K			
R203	47K			
R204	1000Ω			
R205	2700Ω			
R206	100K			
R207	3300Ω			
R208	33K			
R209	6800Ω			
R210	2700Ω			
R211	15K			
R212	2700Ω			
R213	560Ω			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Westinghouse PART No.	REPLACEMENT DATA
K201	Antenna Isolation	470mmf, .3-1meg	690V013H89	Centralab RC-471 Sprague AC1-1
K202	Antenna Isolation	470mmf, .3-1meg	690V013H89	Centralab RC-471 Sprague AC1-1

COILS (RF-IF)

ITEM No.	USE	Westinghouse PART No.	NOTES
L201	Ant. Trans.	690V013H98	Includes Ass'y C201, C202, L202, K201, K202.
L302	44MC Trap	690V013H87	
L303	Mixer Plate	690V013H88	



WESTINGHOUSE CHASSIS V-2414-1, V-2414-2

VHF TUNER (WITH UHF PROVISION) 470V056H02 — 10T — 209890 MFW

FOLDER 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	GENERAL ELECTRIC • RAYTHEON • SYLVANIA • USE	TYPE
V1	1st Video IF Amp.	3BZ6
V2	3rd Video IF Amp.	3BZ6
V3	3rd Video IF Amp.	3DS3
V4	Video Output - AGC Keying	6AU8
V5	Sound IF Amp. - Vert. Mult.	5FV8
V6	Audio Detector	3DT6
V7	Audio Output	5AQ5
V8	Sync Sep. - Noise Limiter	3C36 (3BY6) *
V9	Vert. Mult. - Vert. Output	12DT5
V10	Horiz. Mult.	6CG7
V11	Horiz. Output	12DQ6B
V12	Damper	12AX4GTB
V13	HV Rectifier	1G3GT

PICTURE TUBE

ITEM No	REPLACEMENT DATA: Westinghouse PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V14	23FP4 ①	23FP4 ②				① 23FP4A Alternate ② Aluminized

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	160	300	218V32 III	AFH 37-25	XA0366	XC1-19	WP131.5	TM5-1400	TVL-1473
C3A	160	350	218V025H33	AFH4-100-08		XC4-75	FP419.59		TVL8-4604.2*
B	30	300							
C	30	300							
H	20	50							
C3A	150	350	218V025H35	AFH84-56-06	XD0696	XC4-3	FP419.65	TMQ-4197	TVL-4606.5
H	80	300							
C	10	300							
H	4	300							
C4	100	25	218V025H14	PRS1270	BBR100-25	QT1-23	TC2501	TD-100-25	TVA-1207

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C6	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C7	.0047			BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C8	.22	200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C9	680			DI-680	DD-681	BYA07S68	CCD-681	GP368	10TS-T68
C10	800			BPD-0008	DD-801	L07S	CCD-821	GP382	10TS-T80
C11	680			DI-680	DD-681	BYA07S68	CCD-681	GP368	10TS-T68
C12	68	NPO 10%		NPO-DI 68	DTZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C13	2. 2			NPO-SI 2. 2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C14	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-310	5HK-D10
C15	.0047			BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C16	680			DI-680	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C17	.0015			BPD-0015	DD-215	BYA10D15	CCD-153	B-315	5HK-D15
C18	56	N330 10%	#215V01SA50						10TCR-Q56
C19	.22	400V		P488N-23		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C20	.01	600V		P488N-01	DS-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C21	4. 7			NPO-SI 4. 7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C22	4. 7			NPO-SI 4. 7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C23	.0047			BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C24	.0047			BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C25	.0015			BPD-0015	DD-152	BYA10D15	CCD-153	B-315	5HK-D15
C26	.047	200V		P288N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	2TM-S47
C27	.0047			BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C28	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-310	5HK-D10
C29	.022	600V		P688N-022	DD-203	CUB6S22	6DP-3-223	GEM-6122	6TM-S22
C30	.01	600V		P688N-01	DS-103	CUB6S1	6DP-1-103	GEM-611	6TM-S10
C31	2. 7	NPO		NPO-DI 2. 7		C10Y2C			10TCC-Y27
C32	33	200V		P288N-33		DPM84P33	2DP-5-334	GEM-4033	2PS-P33
C33	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C34	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	.0027	800V 10%		VB4CSD3-10%		DPM36D27	6DP-1-272	GEM-1823	6PS-D27
C36	.001	600V		P688N-001	DS-102	CUB6S1	6DP-1-103	GEM-611	6TM-D10
C37	.033	600V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C38	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C39	.022	400V		P488N-022	DD-203	CUB4S22	4DP-3-223	GEM-4122	4TM-S22
C40	.033	400V		P488N-033	DD-303	CUB4S33	4DP-3-333	GEM-4133	4TM-S33
C41	.047	600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C42	.22	600V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C43	15	NPO 10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C44	.01	400V		P288N-01	DS-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C45	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C46	.001			1469-001		5R5DX	CM-19B-102K	MCB255	M5-S
C47	68	NPO 10%		NPO-DI 68	DTZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C48	19-160		#217V505H01						
C49	120	NPO 10%		NPO-DI 120	DTZ-120			CNO-312	10TCC-T12
C50	.01	600V		P488N-01	DS-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C51	.15	600V		P488N-15		CUB4P15	4DP-4-154	GEM-4015	4TM-P15
C52	.22	600V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C53	150	3000V N1500	#215V300H55						
C54	.0047	600V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C55	.068	600V		P688N-068		CUB6S68	6DP-4-683	GEM-6168	6TM-S68
C56	.047	600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C57	.0015	1400V		HVD-15-1500	DD30-152	HVB20D15	3CCD-152	2HV-315	30GA-D15
C58	.0015	1400V		HVD-15-1500	DD30-152	HVB20D15	3CCD-152	2HV-315	30GA-D15
C59	680			BPD-00068	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C60	680			BPD-00068	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C61	680			BPD-00068	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C62	680			BPD-00068	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C63	.0047			BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C64	.033	600V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C65	.15	600V		P688N-15		CUB6P15	6DP-5-154	GEM-6015	6TM-P15
C66	470	2000V	Note 1	HVD-30-470	DD30-471	HVB20T47	3CCD-471	2HV-347	30GA-T47
C67	680	2000V		HVD-30-680	DD30-681	HVB20T68	3CCD-681	2HV-368	30GA-T68
C68	680	2000V		HVD-30-680	DD30-681	HVB20T68	3CCD-681	2HV-368	30GA-T68
C69	680	2000V		HVD-30-680	DD30-681	HVB20T68	3CCD-681	2HV-368	30GA-T68

Westinghouse Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

Note 1. Not used in VHF Models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Westinghouse PART No	CENTRALAB PART No.	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	270V051H01	BPL-50	C47S -500K-2	B13-133 *	PP58A	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	Not Req.	SK7 *	Not Req.	Push-Pull Off-On
R2A	30K	½	270V065H01	B-26	A47-30K-S	QII-131	RU34L	Contrast
B	Shaft			Not Req.	FS-3	Not Req.	SL-3500	
C	Bushing			Not Req.	Not Req.	Not Req.	SL-38	
R3A	100K	½	270V032H02	B-40	A47-100K-S	QII-128	TA35L	Brightness
B	Shaft			Not Req.	KSB-3	Not Req.	Not Req.	
R4A	2meg	½	270V060H01	B-75	A47-2meg-S	QII-139	TA35L	Vert. Hold
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
R5A	50K	½	270V032H01	B-35	A47-75K-S	QII-135	TA35L	Horiz. Hold
B	Shaft			Not Req.	KSB-3	Not Req.	Not Req.	
R6A	50K	½	270V098H01	BX-31	B47-50K-S	BII-123	PTA64L	AGC
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R7A	5meg	½	270V019H08					Sync Stability Height
B	1meg	½						Vert. Linearity
C	500K	½						

* Factory Assembled Part #PPQ13-133 (SK7).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No	WORKMAN PART No	REMARKS
R8	15meg 5%			
R9	1. 5meg 5%			
R10	8200Ω			
R11	560K 5%			
R12	33K			
R13	47Ω			
R14	470Ω			
R15	8200Ω			
R16	100K 5%			
R17	47K			
R18	470Ω			
R19	27Ω			
R20	470Ω			
R21	150Ω			
R22	220Ω			
R23	3900Ω 5%			
R24	8200Ω			
R25	2700Ω 3W	PW3-2700	3W-SQ-2700	Note 1
R26	2700Ω 3W	PW3-2700	3W-SQ-2700	
R27	1000Ω			
R28	22K 2W			
R29	EEE			
R30	470Ω			
R31	100K			
R32	150K			
R33	12K			
R34	33K 5%			
R35	150K			
R36	100K 5%			
R37	39K			
R38	470K			
R39	39K			
R40	22K			
R41	68K			
R42	1meg 5% 1W			
R43	120K			
R44	560K			
R45	47K 1W			
R46	820Ω			
R47	330Ω 1W			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No	WORKMAN TV PART No	REMARKS
R48	270K			
R49	47K			
R50	8200Ω			
R51	270K			
R52	82K			
R53	270K			
R54	10K 2W			
R55	2. 2meg 1W			
R56	82K			
R57	22K 1W			
R58	1meg			
R59	EEE			
R60	150Ω			
R61	27K			
R62	220Ω 1W			
R63	EEE			
R64	560Ω			
R65	8Ω Cold			#690V01IH08
	1Ω Hot			
R66	33K			
R67	680K			
R68	470K			
R69	47K 1W			
R70	82K			
R71	1000Ω 1W			
R72	1000Ω			
R73	100K 5%			
R74	56K			
R75	150Ω			
R76	470K			
R77	18K 2W			
R78	39K 1W			
R79	470Ω 1W			
R80	4. 7Ω			
R81	680K			
R82	1000Ω 7W	PW7-1000	7W-SQ-1000	
R83	470Ω 2W (SW)*			
R84	18000 20W	PW20-1800	20W-SQ-1800	
R85A	10Ω 15W			#251V027H02
B	22Ω 15W			
R86	22Ω 15W	PW15-23	15W-SQ-23	

Note 1. UHF Models only. # Westinghouse Part Number * Alternate.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Westinghouse PART No.	REPLACEMENT DATA
K1	Sync Sep. Coupling	330mmf, .01mfd, 220K, 2. 2meg	219V030H02	
K2	Vert. Integrator	.0015mfd, .0022mfd, 47K	219V037H02	
K3	Horiz. AFC	39mmf, 47mmf, 220mmf, 390mmf, 680mmf, 4700Ω, 10K, 680K, 1meg	219V028H05	
K4	Chassis Isolation	.001mfd (1400V), 330K	219V004H03	Sprague ACI-8

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Westinghouse PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	41. 25MC Trap	230V069H01				TE236	
L2A	1st Video IF	235V021H02				TE251	
B	47. 25MC Trap						
L3	2nd Video IF	235V020H03				TE249	
L4	39. 75MC Trap	230V030H01				TE230	
L5	3rd Video IF	235V020H03				TE249	
L6A	4th Video IF	235V005H03 ①				TE243	① Includes Complete Assembly
B	RF Choke (4. 7uh)		SW-631	4609	RTC-8519	T977	
C	RF Choke (14uh)			4624	RTC-8524	T862	
L7	RF Choke (14uh)	230V019H10		4624	RTC-8524	T862	
L8	Peaking (350uh)	230V034H01	TV-190	6132	RTC-8577	T349	
L9	4. 5MC Trap	230V030H02				TE231	
L10	Peaking (140uh)	230V034H03	TV-196	6120	RTC-8575	T343	
L11	Peaking (800uh)	230V034H10	TV-207	6156	RTC-8588	T357	
L12	1st Sound IF	230V030H07				T9539	
L13	2nd Sound IF	235V046H01				T8543	
L14	Quadrature	230V031H01				TE334	
L15	RF Choke (14uh)	230V019H10		4624	RTC-8524	T862	
L16	RF Choke (14uh)	230V019H10		4624	RTC-8524	T862	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: Westinghouse PART No	Merit PART No	Miller PART No	Stancor PART No	Thordarson PART No	Triad PART No	Workman TV PART No.	NOTES
L17	Horiz. Stabilizer	230V032H01				HS-16		TA140	

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Cy.)	REPLACEMENT DATA: Westinghouse PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L18	. 240A	25Ω	. 5 Hy.	430V064H01		C-2343		C-34X	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: Westinghouse PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	NOTES
T1	Vert. Output	430V039H01		VO-109 ①		A-108X	
T2	Yoke (Horiz. 20MH) (11kHz) (Vert. 32MH)	490V006H02	MDF-111 ②	DY-38A ③	Y-53 ④	Y-62 & NW1	
	Yoke Clamp	768V014H03					
	Rear Cover and Centering Device	781V396H01					
T3	Horiz. Output	493V006H03					

① Use 9 to 1 Turns Ratio. Drill new mounting holes.
② Connect Yoke Terminal #2 to Horiz. Output Terminal #6; Yoke Terminals #1 and #3 to Horiz. Output Terminal #3; Yoke #10 to Capacitor C58.
③ Connect Yoke Terminal #1 to Horiz. Output Terminal #6; Yoke Terminals #2 and #7 to Horiz. Output Terminal #3; Yoke Terminal #3 to Capacitor C56.
④ Connect Yoke Terminal #2 to Horiz. Output Terminal #6; Yoke Terminals #1 and #3 to Horiz. Output Terminal #3; Yoke Terminal #7 to Capacitor C56.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: Westinghouse PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	NOTES
T4	8500Ω	3-4Ω	430V110H01	A-2901	A-3823	24S07	S-18X	

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP.	REPLACEMENT DATA: Westinghouse PART No.	QUAM PART No.	NOTES
SPI	2" x 10"	PM	3-4Ω	570V038H01 ①		① Used in Models H-T3560, U; 61, U; 63, U; 63, U.
	8"	PM	6-8Ω	570V037H01 ②		② Used in Models H-K3810, U; 11, U; 50, U; 51, U; 52, U.

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: Westinghouse PART No.	RCA PART No.	SARKES TARZIAN PART No.	NOTES
M1	.240A	295V006H03	1N1763	40H	
M2	.240A	295V006H03	1N1763	40H	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: Westinghouse PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M3	*	295V004H01 *	6GC1 *		* Horizontal AFC, Dual Selenium, Common Cathode Type
M4	1N54 ▲ 1N295 †	295V006H01 ▲		1N54 ▲ 1N295 †	▲ Video Detector Crystal Diode † Alternate

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M5	Tuner	470V056H02	VHF with UHF Provisions, Used in Chassis V2414-2.
		470V088H03	Alternate, Used in Chassis V2414-2.
	Tuner	470V055H02	VHF, Used in Chassis V2414-1.
		470V087H01	Alternate, Used in Chassis V2414-1.
M6	Tuner	472V034H04	UHF, Used in Chassis V2414-2.
M7	Width Device	781V407H01	
M8	Circuit Breaker	753V006H01	

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8605 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

WESTINGHOUSE CHASSIS V-2414-1, V-2414-2

FOLDER 2

VHF TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage Lead should be securely taped and kept away from the chassis.
Suggested Alignment Tools: A201, A208, A210, A212, A219 thru A222.....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A217, A218 .....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

OSCILLATOR ALIGNMENT

Set the Fine Tuning to the center of its range.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Coils not containing slugs are adjusted by bending toward or away from switch wafer.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Across antenna terminals.	209.75MC (400∿ 30% AM Mod.)	13	Across Video Det. Load	A201	Adjust for MINIMUM scope indication.
2.	"	"	203.75MC	12	"	A202	"
3.	"	"	197.75MC	11	"	A203	"
4.	"	"	191.75MC	10	"	A204	"
5.	"	"	185.75MC	9	"	A205	"
6.	"	"	179.75MC	8	"	A206	"
7.	"	"	173.75MC	7	"	A207	"
8.	"	"	81.75MC	6	"	A208	"
9.	"	"	75.75MC	5	"	A209	"
10.	"	"	65.75MC	4	"	A210	"
11.	"	"	59.75MC	3	"	A211	"
12.	"	"	53.75MC	2	"	A212	"

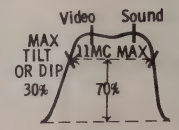


FIG.201

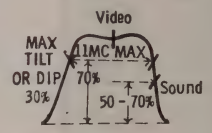


FIG.202

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Connect the negative lead of a 4.5 Volt bias supply to point ⏀ . Positive to chassis.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point ⏀ . Low side to chassis.	A213	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
14.	"	"	"	213MC	"	"	A214, A215	If necessary, adjust by expanding or compressing coil turns for maximum symmetrical response centered about 113MC marker.
15.	"	"	"	210MC 216MC	"	"	A216	Adjust spacing between "gimmick" wires (A216) for proper bandwidth as in Fig. 201.
16.	"	"	177MC	177MC	7	"	A217, A218	Adjust to obtain correct tilt on top of curve as in Fig. 203 to compensate for the tuning effect of channel 13. Repeat step 14, retouch only SLIGHTLY. Repeat step 16.
17.	"	"	85MC	87.75MC	6	"	A219, A220	Adjust for approximate correct bandwidth with sound carrier between 50 and 70% as in Fig. 202.
18.	"	"	"	83.25MC	"	"	A221	Adjust for maximum gain at 83.25MC marker. Repeat step 17, adjust A219 and A220 only SLIGHTLY.
19.	"	"	Not Used	43.5MC (400∿ 30% AM Mod.)	4	Across Video Det. Load	A222	Adjust for MINIMUM 400∿ indication on scope.

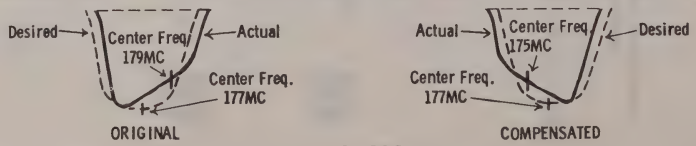
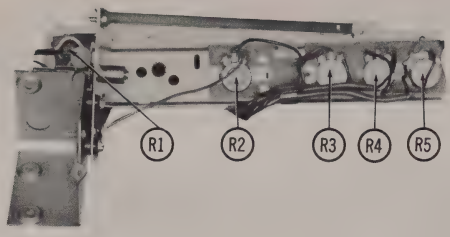
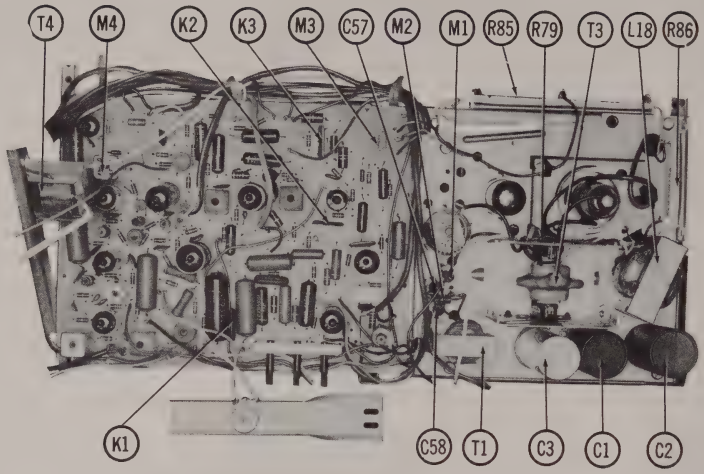


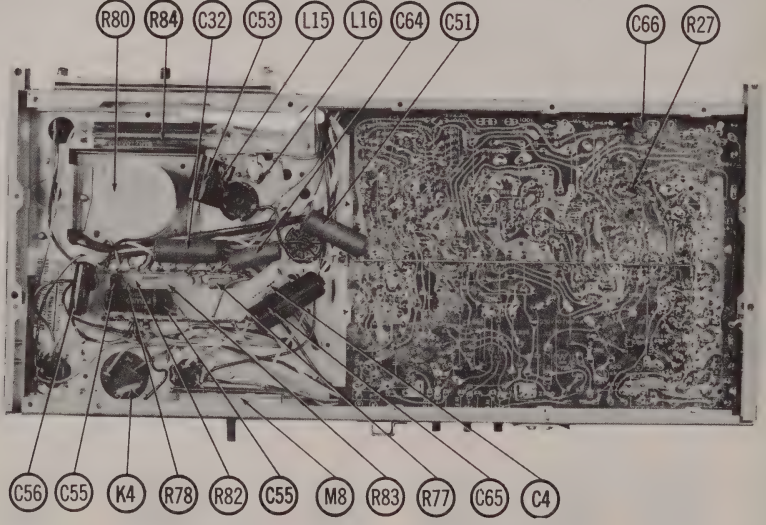
FIG. 203



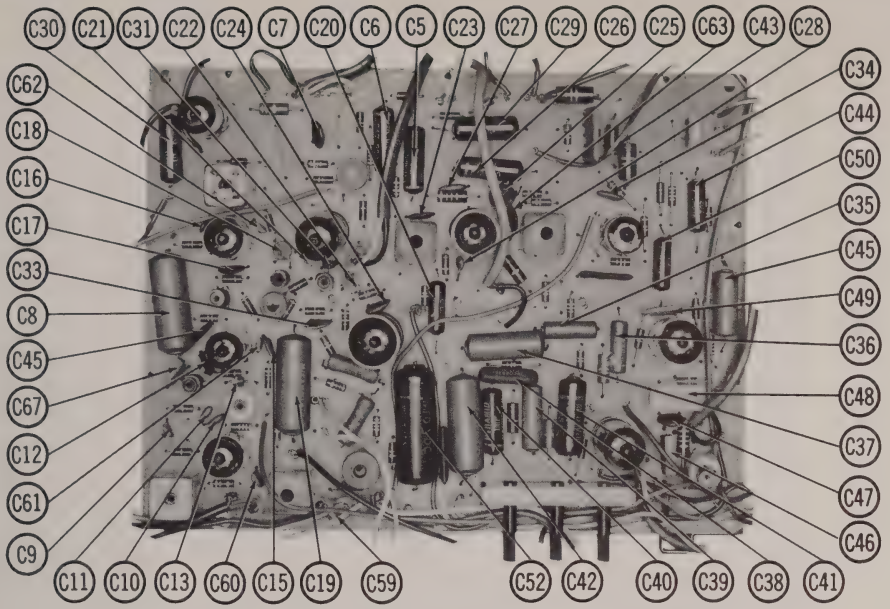
CONTROL PANEL



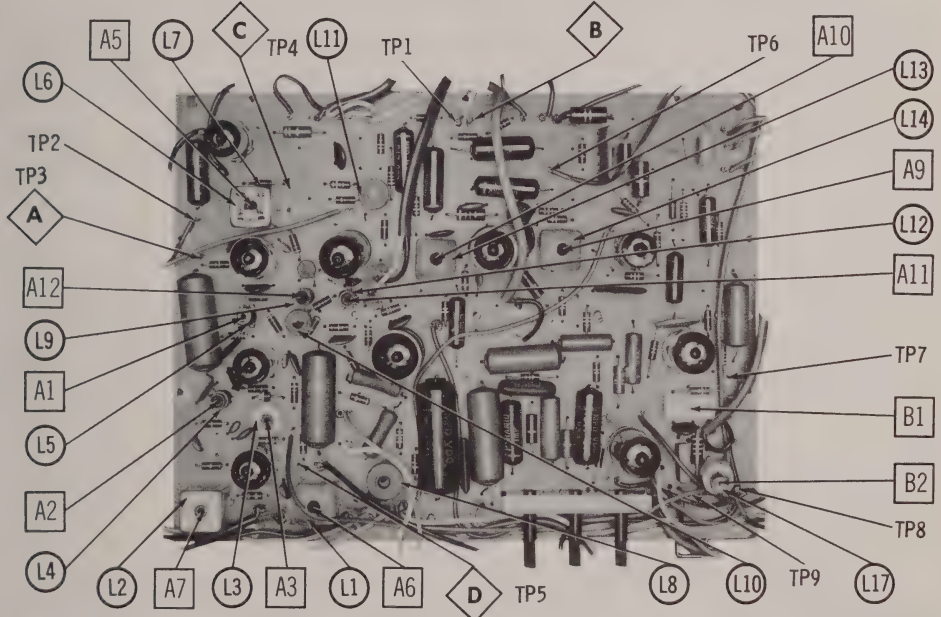
CHASSIS - TOP VIEW



CHASSIS - BOTTOM VIEW



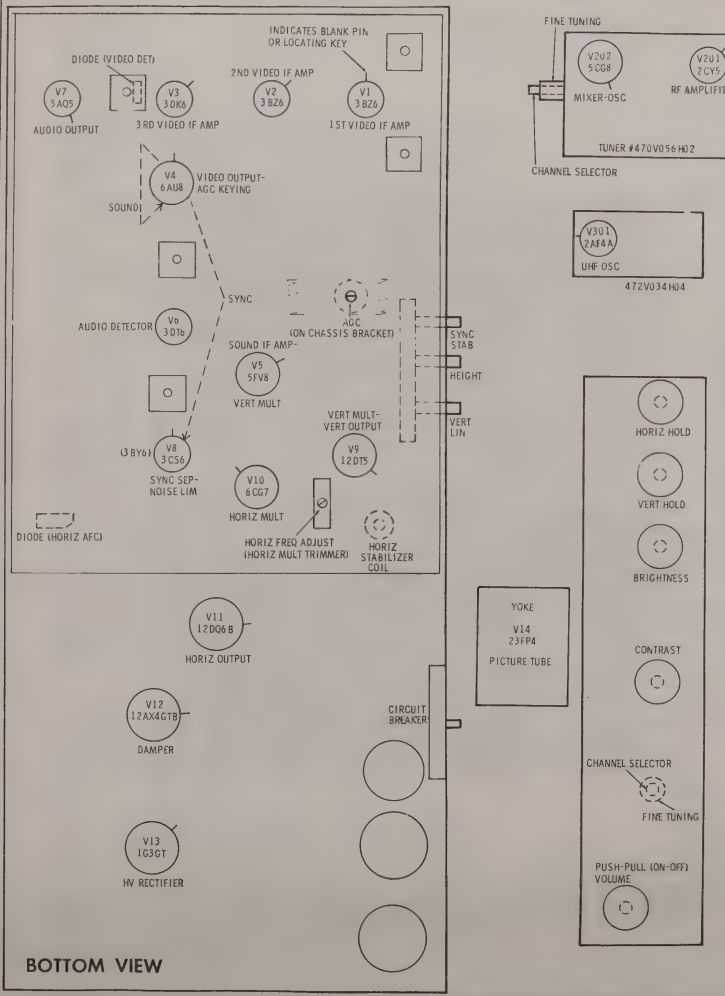
PRINTED BOARD - CAPACITOR IDENT.



TP1	.2V	TUNER AGC	TP4	-.25V	VIDEO OUTPUT GRID	TP7	-.5V	HORIZ MULT GRID
TP2	-.1V	1ST IF GRID	TP5	48V	PICTURE TUBE CATHODE	TP8	245V	HORIZ STAB. COIL
TP3	-.1V	IF AGC	TP6	0V	QUADRATURE	TP9	240V	HORIZ STAB. COIL

PRINTED BOARD - ALIGN., INDUCTOR, TEST POINT IDENT.

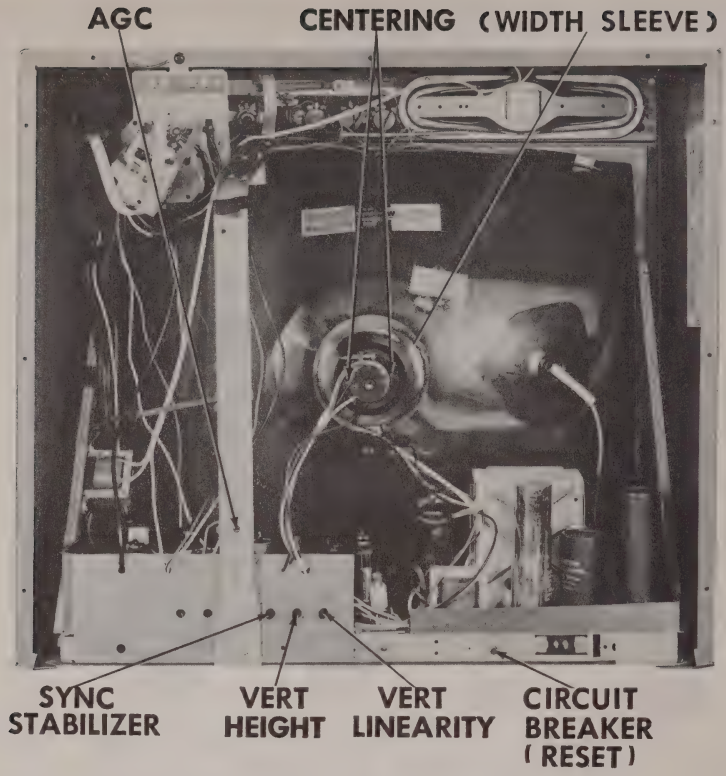
TUBE PLACEMENT CHART



RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	60K	47Ω	5Ω	6Ω	†2300Ω	†2300Ω	0Ω		
V2	3BZ6	60K	27Ω	6Ω	7Ω	†2300Ω	†2300Ω	0Ω		
V3	3DK6	.1Ω	150Ω	7Ω	8Ω	†2300Ω	†2300Ω	0Ω		
V4	6AU8	●†40K	†50K	700K	10.5Ω	9Ω	10Ω	3900Ω	●†40K	†5500Ω
V5	5FV8	●1.6meg	●†6.2meg	0Ω	11.5Ω	10.5Ω	†41K	†32K	0Ω	470K
V6	3DT6	4.5Ω	820Ω	11.5Ω	12Ω	†1meg	†49K	560K		
V7	5AQ5	0Ω	330Ω	8Ω	9Ω	†1500Ω	†1000Ω	0Ω		
V8	3CS6	51K	0Ω	12Ω	12.5Ω	†180K	†12K	2.2meg		
V9	12DT5	†495Ω	NC	●1.3meg	14Ω	12.5Ω	●1.3meg	220Ω	NC	†775Ω
V10	6CG7	†57K	●230K	1000Ω	1.5Ω	0Ω	†48K	2.2meg	1000Ω	0Ω
V11	12DQ6B	0Ω	42Ω	NC	†18K	470K	NC	37Ω	0Ω	TOP CAP †10Ω
V12	12AX4GTB	NC	NC	6.5meg	NC	†25Ω	NC	42Ω	45Ω	
V13	1G3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †700Ω
V14	23FP4	1.5Ω	150K	†690K	0Ω	NC	NC	●180K	3Ω	
V201	2CY5	1.7meg	0Ω	5Ω	4.5Ω	†2800Ω	†17K	0Ω		
V202	5CG8	15K	†4500Ω	0Ω	3.5Ω	4.5Ω	†5100Ω	†10K	0Ω	100K
V301	2AF4A	▲†7300Ω	5600Ω	3.5Ω	3Ω	.1Ω	5600Ω	▲†7300Ω		
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
‡ MEASURED FROM PIN 3 OF V12.
▲ MEASURED IN "UHF" POSITION.
NC NO CONNECTION



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a short clip lead across the Horizontal Stabilizer Coil (L17).

Set the Horizontal Hold Control to the center of its range.

Connect the DC probe of a VTVM to TP-7. Common to chassis.

Tune in a TV station and adjust the Horizontal Multivibrator Trimmer (B1) for zero volts on the VTVM. If zero can be approached but not reached, set the Horizontal Hold Control slightly to one side of center for zero voltage.

Remove the jumper from L17 and adjust the Horizontal Stabilizer Coil Slug (B2) for zero reading on the meter. Check lock-in action by switching from channel to channel. The picture should pull into synchronization on all channels.

DISASSEMBLY INSTRUCTIONS

CHASSIS AND PICTURE TUBE ASSEMBLY REMOVAL

1. Remove 3 push-on type knobs on front panel and 2 push-on type knobs on side of cabinet.
2. Remove 8 screws in rear cover. Remove rear cover.
3. Remove 3 chassis bolts.
4. Remove 3 screws at bottom of control panel.
5. Remove 2 screws (inside cabinet) holding control panel from rear.
6. Remove control panel.
7. Remove 4 push-on type knobs.
8. Remove 4 screws holding control bracket assembly.
9. Remove speaker leads.
10. Pull chassis and picture tube straight out.

PHOTOFACT® Folder

PRODUCTION CHANGE BULLETIN

PRODUCTION CHANGE BULLETIN

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 9 IN SET 362

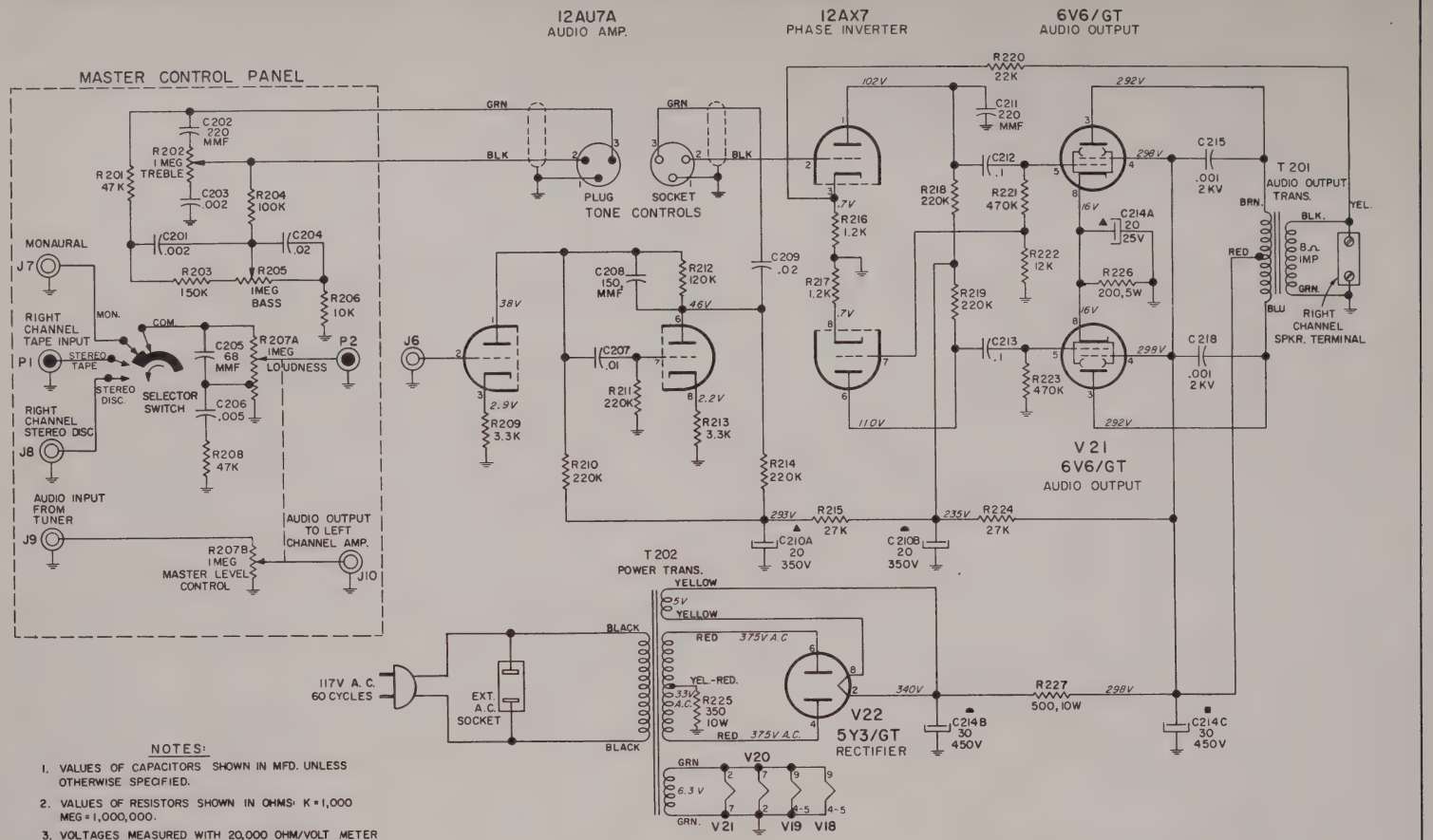
SILVERTONE MODELS 9065, 9067, 9068 (CH. 528.53171, 528.53270, 528.59140)

	Silvertone Models 7065, 7066 (Ch. 528.47800, 528.47900, 567.35015) were covered in PHOTOFACT Folder 9 - Set 362. Models 9065, 9067, 9068 (Ch. 528.53171, 528.53270, 528.59140) are electrically similar except for the following changes.
Ch. 528.53171	COMPONENT CHANGES C67 is increased from 100mmf to 220mmf. C70 is decreased from .047 to .022. C71 is decreased from .033 to .002. R81 is decreased from 560K to 220K. R92 is increased from 3300Ω to 6800Ω. V12 (AF Amp. & Cathode Follower) is changed from a Type 12AU7 to a Type 12AX7. The following circuit changes are made when the 12AX7 is used. R93 is relocated between Pin 1 of V12 (12AX7) and the junction of C2 & R94. R90 & R92 are connected to ground. C75 is relocated from Pin 3 of V12 (12AX7) to Pin 1 of V12 (12AX7).
Ch. 528.53270	COMPONENT CHANGES R8 (Audio Adjust) is omitted. C76 connects to Pin 2 of V13 (12AU7). A 1meg Resistor is added from Pin 2 of V13 to ground. C77 is relocated from Pin 2 of V13 to Pin 1. AMPLIFIER CHASSIS ADDED Some Models may use a different amplifier chassis 528.59120. A partial schematic diagram showing the alternate amplifier is given in this bulletin. STEREO PRE-AMP CHASSIS ADDED A second channel stereo preamp. chassis 528.59150 may be used in some versions. A partial schematic diagram showing the alternate preamp. is given in this bulletin.

(Continued On The Reverse Side)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



NOTES:

1. VALUES OF CAPACITORS SHOWN IN MFD. UNLESS OTHERWISE SPECIFIED.
2. VALUES OF RESISTORS SHOWN IN OHMS; K = 1,000 MEG = 1,000,000.
3. VOLTAGES MEASURED WITH 20,000 OHM/VOLT METER FROM POINT INDICATED TO CHASSIS GROUND
4. SELECTOR SWITCH SHOWN IN MONAURAL POSITION

SILVERTONE CHASSIS 528.59120

Schematic Diagram Courtesy of Sears, Roebuck & Company

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 14 IN SET 422

SILVERTONE MODEL 9074 (CH. 528.59220)

Silvertone Model 8074 (Ch. 528.59051) was covered in PHOTOFACT Folder 14 - Set 422.

Model 9074 (Ch. 528.59220) is electrically and mechanically identical except for the following changes.

COMPONENT CHANGES

The Power Transformer (T1) is changed to part #80-19-0. This transformer uses an added 6.3V @ .3 Amp. Winding, which is used in conjunction with an added power socket. A partial schematic diagram showing the new power supply is given in this bulletin.

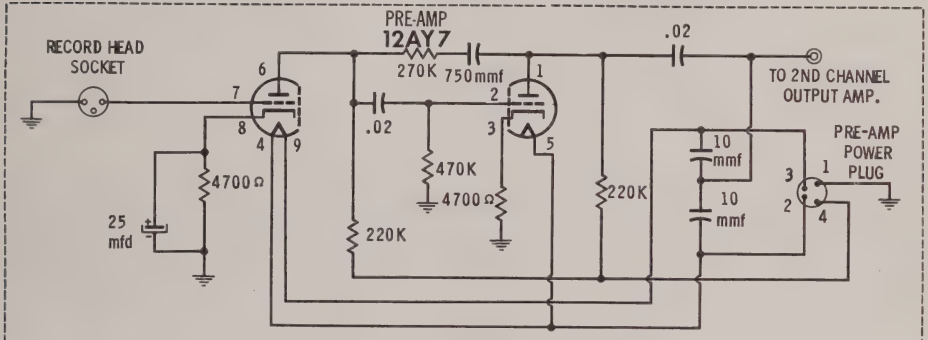
The Audio Output Transformer (T2) is changed to part #80-59-1. With this change the secondary tap of T2 is omitted.

RECORD-PLAY HEAD CHANGE

M1 and M2 are changed to a stereo type record-play-erase head part #84-4874.

STEREO PREAMPLIFIER ADDED

A stereo Preamplifier (Ch. 528.59150) is added. A partial schematic diagram showing the added preamplifier is given in this bulletin.



SILVERTONE CHASSIS 528.59150

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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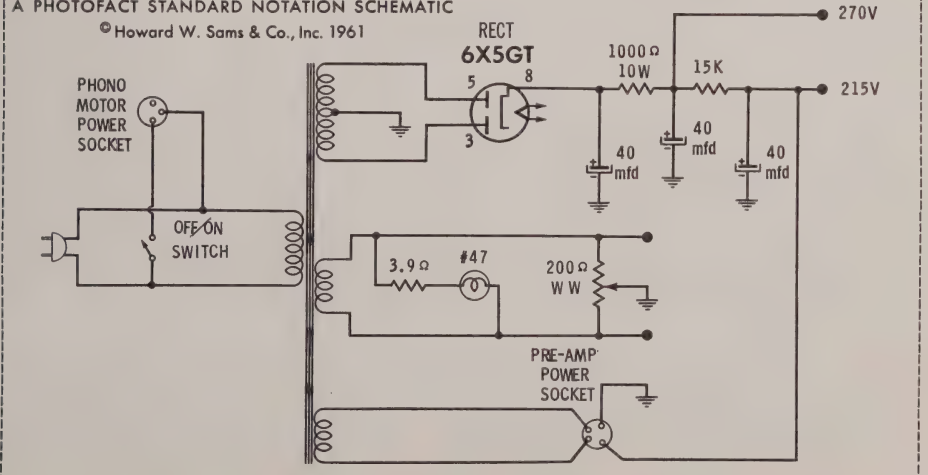
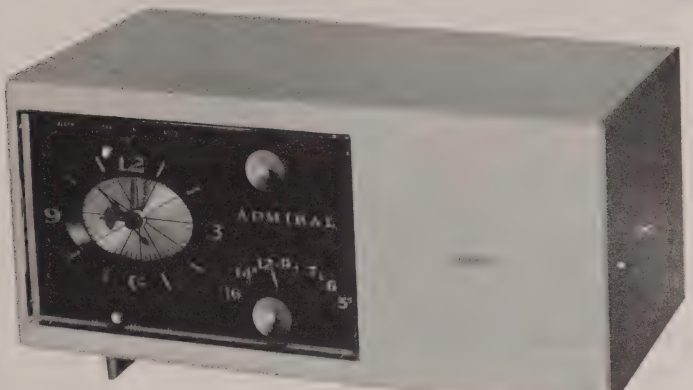


PHOTOFACT® Folder with CIRCUITRACE®

ADMIRAL MODELS Y3021, Y3027, Y3046, Y3048, Y3049 (Ch. 5R5, 5S5)

ADMIRAL MODELS Y3021, Y3027, Y3046, Y3048, Y3049 (Ch. 5R5, 5S5)



MODEL Y3048

ADMIRAL MODELS Y3021, Y3027, Y3046, Y3048, Y3049 (Ch. 5R5, 5S5)

TRADE NAME	Admiral Models Y3021, Y3027 (Ch. 5R5); Y3046, Y3048, Y3049 (Ch. 5S5)
MANUFACTURER	Admiral Sales Corp., National Service Div., 903 Morrissey Drive, P. O. Box 845, Bloomington, Ill.
TYPE SET	AC Operated 5 Tube AM Receiver (Models Y3021, Y3027 are not Clock Versions)
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 23 Watts, .23 Amp. @117 Volts AC (Less Clock)
TUNING RANGE—BROADCAST	535 – 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4, A6... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A7..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to Ant. stator lug of Tuning gang. Low side to chassis.	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1620KC	"	"	A5	"
3.	"	600KC	600KC	"	A6	"
4.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2, 3 and 4.

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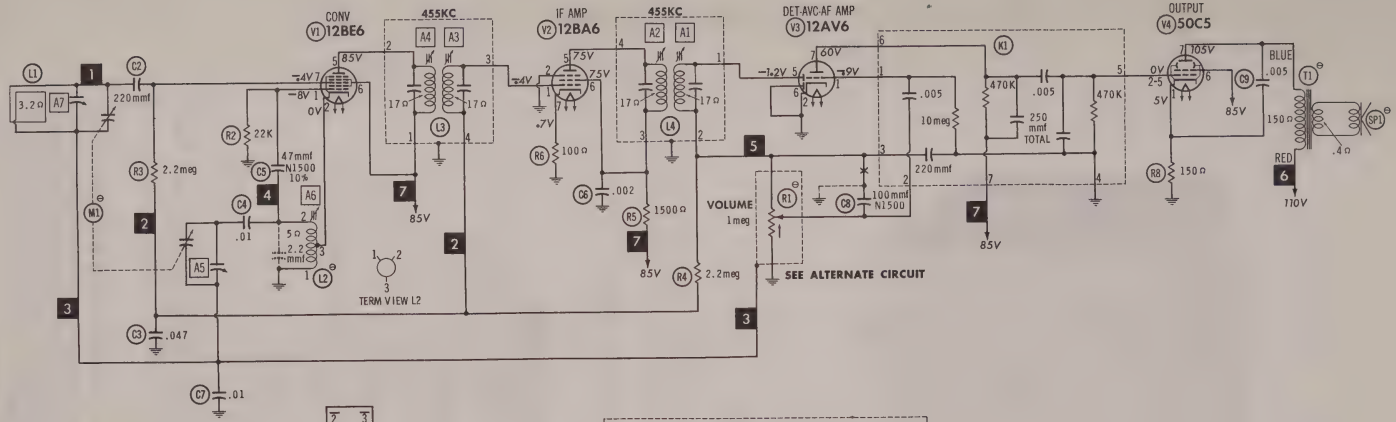
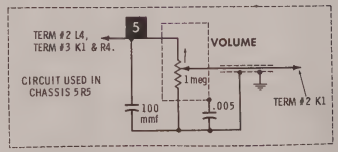
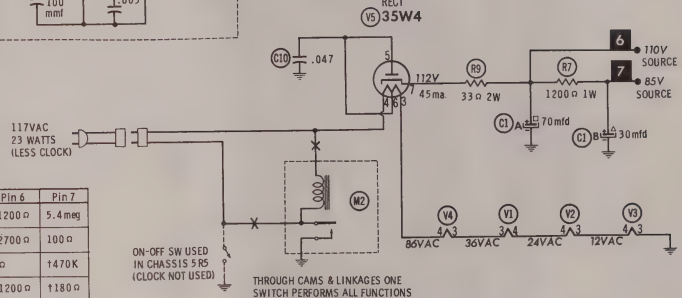
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KG880

SET 558 FOLDER 4







● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.3Ω	45Ω	30Ω	†1200Ω	†1200Ω	5.4meg
V2	12BA6	3.2meg	0Ω	15Ω	30Ω	†2700Ω	†2700Ω	100Ω
V3	12AV6	10meg	0Ω	0Ω	15Ω	1meg	0Ω	†470K
V4	50C5	150Ω	NC	110Ω	45Ω	470K	†1200Ω	†180Ω
V5	35W4	NC	TP	110Ω	150Ω	145Ω	145Ω	¶ INF

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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ADMIRAL MODELS Y3021, Y3027, Y3046, Y3048, Y3049 (Ch. 5R5, 5S5)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Converter	12BE6
V2	IF Amplifier	12BA6
V3	Det. -AVC-AF Amp.	12AV6
V4	Output	50C5
V5	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	■70	150	67D30-2	PWH2-17-50	B0180 †	XC2-30 ‡	PFP214.3	TMD-2125 ♦	PCL-2441
B	▲30	150							

† Use printed circuit adapters #55277 & 55278.
♦ Use printed circuit adapter kit TMA.
‡ Use printed circuit adapter kit PMA1.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C3	.047 200V		P488N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C4	.01		BPD-01	DD-103	BYA10S1	CCD-103 *	B-110	5HK-S10
C5	47 N1500 10%	#65D10-180						
C6	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C7	.01		BPD-01	DD-103	BYA10S1	CCD-103 *	B-110	5HK-S10
C8	100 N1500	#65D10-84						10TCP-T10
C9	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C10	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

Admiral Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1meg	½	75D25-15 ①				P2-16A	Volume

① Chassis 585. Chassis 5R5 uses Part #75B74-1 (with switch).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	22K			
R3	2.2meg			
R4	2.2meg			
R5	1500Ω			
R6	100Ω			
R7	1200Ω 1W			
R8	150Ω			
R9	33Ω 2W			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ADMIRAL PART No.	REPLACEMENT DATA
K1	Audio Coupling	220mmf, 250mmf, .005mfd, .005mfd, 470K, 470K, 10meg	63C6-20	Aerovox PA-306 Centralab PC-159 Sprague DT-6

PRINTED BOARD

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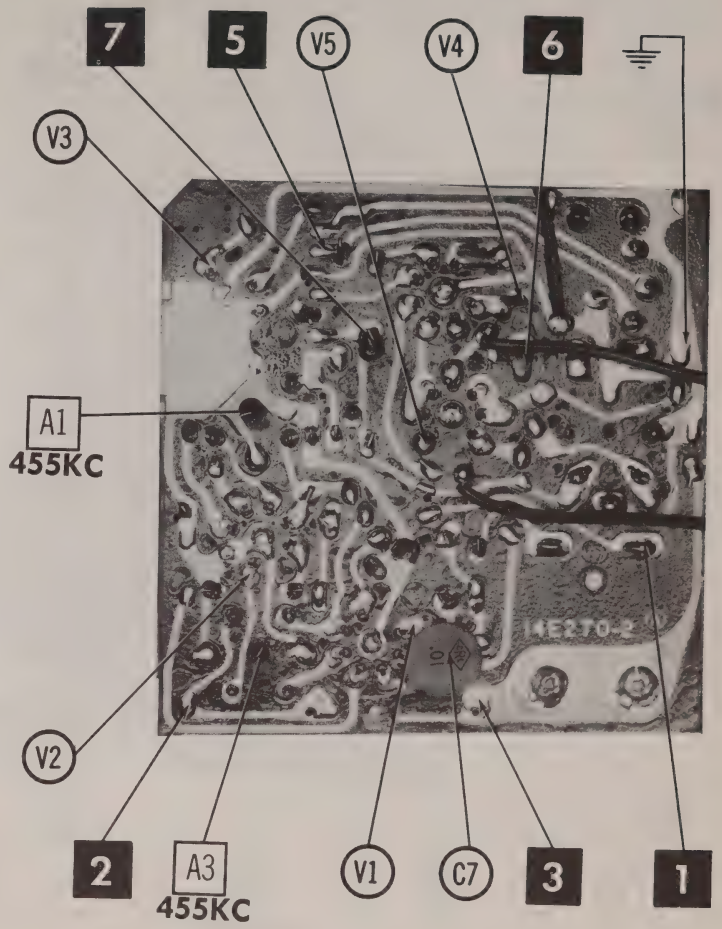
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ADMIRAL PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loop Ant.	A8502 ①					① Includes AC Interlock
L2	Osc.	69C263-1 ②					② Omit 2.2mmf shunt if used originally.
L3	Input IF	72C170-5	BC-356	13-PC1	RTC-8641	T614	
L4	Output IF	72C170-4	BC-357	13-PC2	RTC-8642	T615	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	(Part of SP1)*	A-3025	A-3332	24S53	S-12X	* Models Y3046, Y3048, Y3049
	2400Ω	3-4Ω	79D33-39♦	A-3025	A-3332	24S53	S-12X	♦ Models Y3021, Y3027

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	78B142-3*	4A05	* Includes T1; Models Y3046, Y3048, Y3049
	6"x 9"	PM	3-4Ω	78D171-1♦		♦ Includes T1; Models Y3021, Y3027

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M1	Tuning Cap.	68C78-5	2 Gang, Chassis 5S5
	Tuning Cap.	68C78-7	2 Gang, Chassis 5R5
M2	Clock Ass'y.	91C50-1	Includes Field Coil Ass'y. #91C50-15 and Switch #91C50-14.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

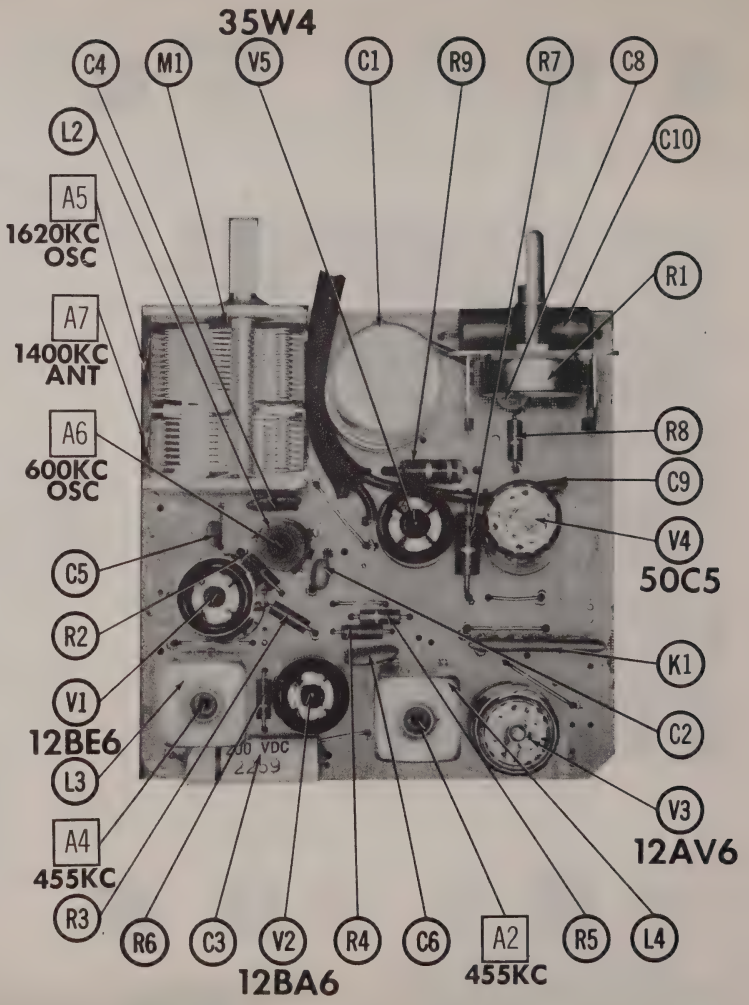
NAME	PART NO.	DESCRIPTION
Crystal	24C37-1	Models Y3046, Y3048, Y3049
Dial Pointer	33A410-1	Models Y3046, Y3048, Y3049
Knob, Clock	33A417-1	Black, Models Y3046, Y3048, Y3049
Knob, Tuning	33B409-1	Black & Gold, Models Y3046, Y3048, Y3049
Knob, Volume	33B409-2	Black & Gold, Models Y3046, Y3048, Y3049
Knob, Tuning	33D430-2	Vernier, Models Y3021, Y3027
Knob, Tuning	33D430-3	Indicator, Models Y3021, Y3027
Knob, Volume	33D430-1	Models Y3021, Y3027
Cabinet Front	34D162-1	White, Models Y3046, Y3048, Y3049
Cabinet Back	34D129-44	Yellow, Model Y3046
Cabinet Back	34D129-45	Green, Model Y3048
Cabinet Back	34D129-46	Gray, Model Y3049
Cabinet Back	34E170-1	Black, Model Y3021
Cabinet Back	34E170-2	Walnut, Model Y3027
Cabinet Front	34E169-1	White, Models Y3021, Y3027

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW



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AUDIOMATIC MODEL
A-900

AUDIOMATIC MODEL
A-900

GENERAL INFORMATION

The Audiomatic Model A-900 is a dual-track monaural tape recorder and player. It will play two or four track prerecorded stereophonic tapes.

Model A-900 features push-button control for each tape transport mode. These modes are: Rewind, Record, Stop, Play, and Fast Forward.

Double track recording is used, giving two full length recordings on a reel of tape. Any size reel up to 7" can be used. A record level indicator is provided to simplify the record level setting. New recordings can be made on previously recorded tape since the erase head is automatically positioned when the record button is depressed. Monaural recordings can be made from a radio, television receiver, or phonograph in addition to those made directly from the microphone.

This recorder has two tape speeds, 7.50 inches per second, and 3.74 inches per second. Using both tracks, the recording time is as follows:

Reel Size	3.75 Speed	7.50 Speed
5" (600 ft.)	1 hour	1/2 hour
7" (1200 ft.)	2 hours	1 hour

Connect this recorder to a 117 volt, 60 cycles, AC supply only.

Supplied By:

Continental Iambic Inc.,
6842 W. Archer,
Chicago, Illinois

SET 558 FOLDER 5

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

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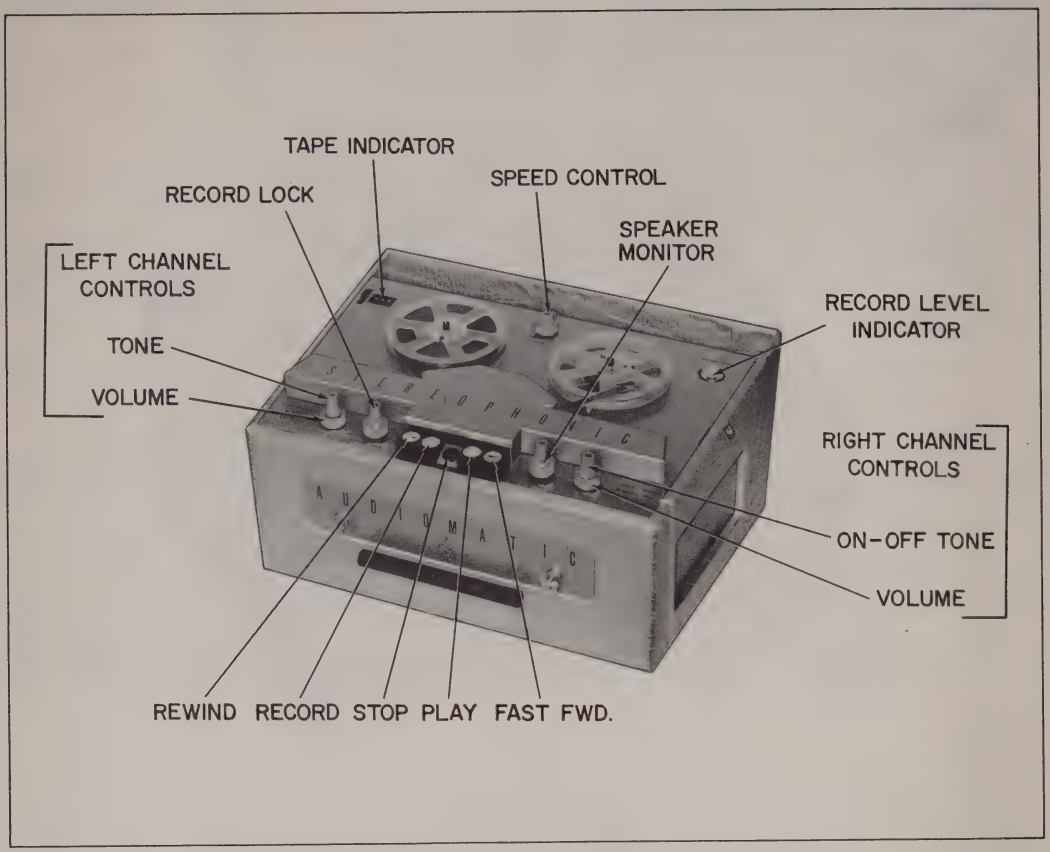


Fig. 1. Audiomatic A-900 with cabinet top removed.

TECHNICAL SPECIFICATIONS
AUDIOMATIC MODEL A-900

Amplifier

Stereo Input:
In STOP position, both serve as low level inputs for using the recorder as a complete amplifier. For stereo, both are used; monaurally, either can be used.

Recording Input:
For recording directly from radio or TV or from the Model P-902 phonograph.

Sing A-Long Input:
Permits use of microphone when playing tape or records.

Ext. Spkrs:
For earphone monitoring or operation of external speaker system. Also can be used as variable outputs for feeding external amplifier or built-in Hi-Fi systems.

Volume Controls (Two):
Both bass and treble compensated. Independently controls output of each channel.

Output:
6 watts peak (stereo).

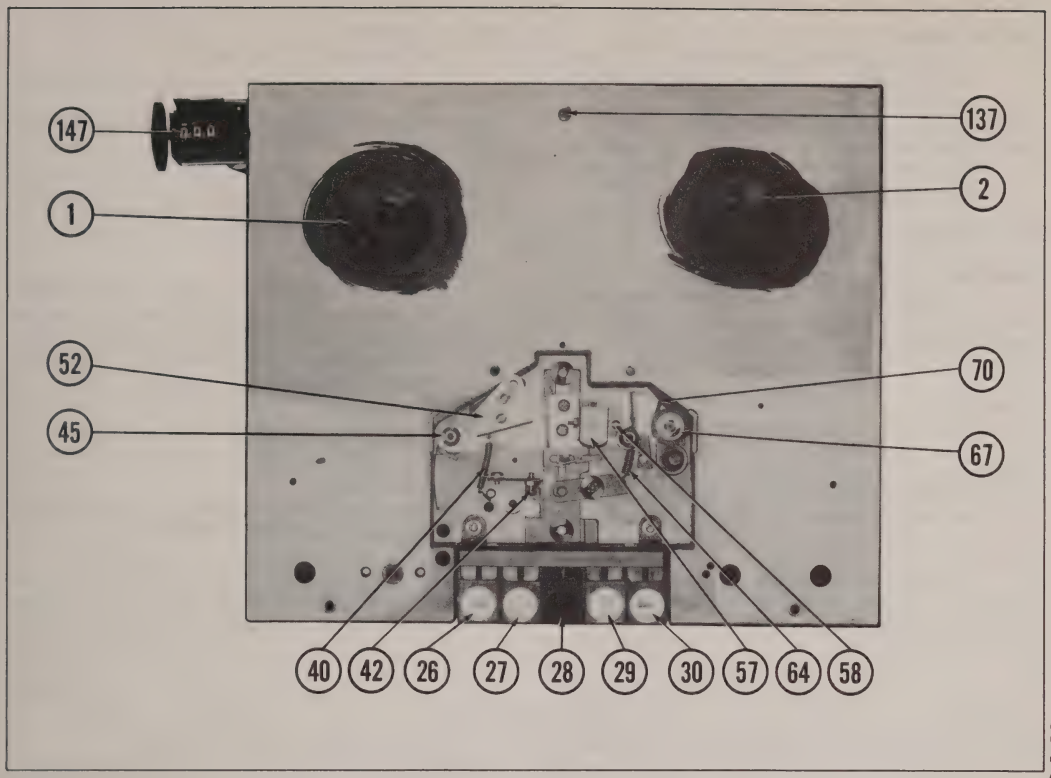


Fig. 2. Top View of mechanism with baseplate overlay removed.

Tube Complement:
1--5Y3, 2--ECC82/12AU7, 2--ECL82/6BM8.

Power Supply:
Heavy duty, transformer type, hum and noise shielded. 117VAC, 112 watts.

Frequency Response:
40 to 15,000 cps @ 7 1/2 ips + 3 db.

Record Indicator:
Easy view, tube type (tuning eye).

Harmonic Distortion:
5% at peak output.

Speakers:
2--5" x 7" heavy permanent magnet, extended range matched speakers. Acoustically baffled with On-Off monitoring switch.

Chassis:
Heavy aluminum, fully shielded.

Signal To Noise Ratio:
40 db minimum.

Bias Frequency:
80,000 cycles, for distortion-free recording.

Tone Controls (Two):
Full range, from maximum brilliance to rich bass tone. Independent control of each channel for best listening pleasure.

General

Size:
18 7/8" x 9 3/4" x 15 1/4"

Weight:
39 lbs.

Storage Compartment:
For tape, reels, AC cord, and microphone.

Public Address System:
Can be used while recording.

AC Outlet:
Located on rear panel. Provides AC outlet for phonograph, etc.

Duplicating Tapes:
Using two units exact copies can be made.

Standard Accessories:
1-Humi-Seal Crystal Microphone, 1-7" empty reel, 1-5" reel of tape, 1-instruction book, 1-warranty certificate.

Accessories Available:
Patch cords - for recording from radio, phono, TV. Duplicating cords - for copying tapes.

Tape Transport

Tape Speed:
3 3/4 and 7 1/2 ips. Rapid forward and rewind.

Tape Reel Size:
3", 5", or 7".

Record Lock:
Safety feature to prevent accidental erasure.

Erase:
Patented permanent magnet, diagonal gap, positive, automatic.

Controls:
Full pushbutton operation, all modes.

Wow and Flutter:
.35% or less-7 1/2 ips speed.

Tape Indicator:
By integral numbers, easily reset, giving instantaneous selection.

Record-Playback Head:
Stacked in-line, combined 1/4 or 1/2 track, fully shielded .0002 gaps.

Motor:
Dynamically balanced, vibration free. Heavy duty, constant speed, 4-pole shaded--1700 rpm. Contains lifetime, self-aligned, select fit oilite bearings. Motor mounted on special isolation type floating mounts.

Flywheel:
Balanced, zinc die cast.

Unit Mounting Plate:
Sturdy one piece aluminum die-cast metal--other parts placed for protection.

Cooling:
4" fan, forced ventilation.

SPECIFICATIONS
MODEL P-902 STEREOPHONIC PHONO DISC-TURNTABLE
(ACCESSORY)

Speeds:
3-speed manual turntable-33 1/3, 45, and 78 rpm.

Cartridge:
Stereophonic cartridge with turnover needle.

Neutral Position:
To prevent drive wheel "flat spots" when not in use.

Cables:
For either monaural or stereophonic reproduction.

Weight:
Approximately 8 lbs.

Size:
14" x 8" x 5".

Case:
Portable with cover and handle.

SPECIFICATIONS
MODEL S-901 DUAL EXTENSION SPEAKERS
(ACCESSORY)

Carrying Case:
Portable, separates into two separate tone balanced speakers.

Case Complement:
Each unit consists of one-8" permanent magnet speaker and one-3" tweeter. Crossover network used in each unit.

10-Foot Leads:
2-used, for plugging into Audiomatic extension speaker jacks.

Extra Speaker jack:
Enables use of both speakers monaurally for greater volume and coverage.

Weight:
Approximately 18 lbs.

Size:
15 1/2" x 14" x 12".

FUNCTIONS OF CONTROLS & PUSHBUTTONS

On-Off, Tone, Volume - Right Channel

This is a dual control located at the extreme lower right side of the top panel. The large outer rim controls the volume of the sound from the right channel speaker when playing stereo. The small inner knob turns the Audiomatic "on" and also is used to adjust the tone from the right channel speaker.

Speaker Monitor

This control is located to the left of the ON-OFF switch. It serves as a monitor control so that you can listen to sound as it is being recorded monaurally. Turning this control to the right (clockwise) turns on the left internal speaker. Turned to the left, the speaker is disconnected. The SPEAKER MONITOR switch does not control the right internal speaker or extension speakers.

Tone, Volume - Left Channel

This, also, is a dual control, located at the extreme left on the top panel. The large outer rim controls the volume of the left channel speaker. The small inner knob is used to adjust the tone from the left channel speaker.

Record Lock

This knob serves to prevent recordings from being accidentally erased by pressing the RECORD pushbutton by mistake.

NOTE: THIS KNOB MUST BE TURNED TO THE RIGHT (CLOCKWISE) BEFORE THE RECORD BUTTON CAN BE DEPRESSED.

Speed Control

The SPEED knob should point to 7.50 or 3.75 according to the speed desired. The Audiomatic has two tape speeds, 7.50-inches-per-second and 3.75-inches-per-second. Insofar as quality of recording reproduction is concerned. Speed is an important factor. The higher the speed, generally, the greater will be the fidelity.

Caution: Do not turn the SPEED knob unless the STOP button is depressed.

Rewind Button

This button is used to transfer the tape rapidly from the right (take-up) reel to the left (supply) reel at high speed.

Record Button

This button is used to start the Audiomatic recording any sound being fed to the tape from microphone, radio, TV, phonograph, or telephone.

Note: THE RECORD LOCK MUST BE TURNED BEFORE THE RECORD BUTTON CAN BE DEPRESSED.

Stop Button

This button is used to stop tape travel after being in either the PLAY, RECORD, FORWARD, or REWIND modes. It is also a safety feature and must always be left pressed down when the recorder is not in use.

Play Button

This button is used to start the Audiomatic playing back any recording that is on the tape, monaural or stereophonic.

Forward Button

This button is used to transfer the tape rapidly from the left reel to the right reel without recording or playing back.

Tape Indicator

Set the counter to zero by turning its reset knob toward the rear of the recorder when starting to record or play back a reel of tape. If the reading of the counter is noted at various points in the tape travel, new program selections can be indexed, or previously recorded selections can be located with great accuracy.

Record Level Indicator

The RECORD LEVEL indicator gives a visual analysis of the correct volume setting for the RECORD function. Adjust the LEFT CHANNEL VOLUME control to the point where the RECORD LEVEL indicator does not quite close on peak passages.

REAR PANEL CONNECTIONS

Ext. Spkrs. - Left and Right

These jacks provide a connection for external speakers. When external speakers are used, the internal speakers are automatically disconnected.

Sing A-Long

By inserting the microphone plug into the Sing A-Long jack, the operator can accompany phonograph records or monaural tapes without his voice being recorded on the tape.

Mic. Input

The microphone may be plugged into this jack for recording or for public address use.

Recording Input

This jack is designed to connect the audio signals from a radio, phonograph, or television receiver to the recorder for recording purposes.

Stereo Input

These input jacks are designed for connecting the two phono pick-up cables from a stereo phonograph to the recorder for playing stereo records.

OPERATING INSTRUCTIONS

Preparation For Operation

1. Remove the AC power cord, reel of tape, empty reel, and the microphone from the rear compartment.

2. Depress the STOP button.

3. Plug the AC cord into a convenient wall receptacle of the proper rating.

4. Set SPEED control knob in the 3.75 or 7.50 position as desired.

Caution: Do not turn SPEED control knob unless STOP button is depressed.

When the forward or reverse buttons are depressed, the RECORD and PLAY buttons are locked so that they cannot be pressed down, with, the possibility of spilling tape. The buttons should always be pressed down firmly until they latch. The STOP button must be depressed before changing functions or speeds of the recorder.

Important: Always depress the STOP button when the recorder is not in use.

Threading The Tape

1. Place a reel of tape on the supply pan (left) making certain the reel slots catch the protrusions of the pan.

2. Place an empty reel, the same size or larger, on the take-up pan (right). Again make certain the reel slots catch the protrusions of the pan.

3. Release the STOP button by pressing lightly on any one of the other four pushbuttons so that all buttons are in the released position. This releases the tape brakes, simplifying tape threading.

4. Unwind about 14-inches of tape from the supply reel. Hold a section of tape straight with both hands and insert the tape in the tape slot making sure that the dull coated side of the tape faces away from the operator (toward rear of unit).

5. Insert the free end of the tape into the slot in the hub of the empty reel. While holding the tape in place, give the reel two or three turns to secure the tape to the reel.

Note: Do not route tape around tape post.

To Record From Microphone

1. Insert the microphone plug into the MIC. jack located on the rear panel.

2. With the STOP button depressed, turn the ON-OFF TONE control to the right (clockwise) until a click is heard. Allow the recorder to warm-up until the RECORD LEVEL indicator glows green.

3. Place the SPEED knob in the position desired. As a general rule, 3.75-inches per second for voice, and 7.50-inches per second for music.

4. Turn the RECORD LOCK to the right with the left hand and with the right hand depress the RECORD button--then release the RECORD LOCK.

5. While holding the microphone about 3-4-inches away from the mouth, speak in a normal tone of voice and adjust the LEFT CHANNEL-VOLUME control to the point where the RECORD LEVEL indicator does not quite close on peak passages.

Note: To monitor the sound being recorded, turn the SPEAKER MONITOR control to the right. Care must be taken to keep the microphone far enough from the recorder to prevent squeal due to acoustic feedback.

Rewind (◁) Or Fast Forward (▷)

When it is desirable to play a certain portion of a tape over again, it is not necessary to rewind the entire reel. By depressing the rewind (◁) button the tape will reverse at a rapid speed. By depressing the fast forward (▷) button the tape will advance at a rapid speed.

To Record From Radio Or TV

While it is possible to record sound from an external source simply by placing the microphone in front of the speaker, this is not recommended as background noises will be recorded along with the desired program material.

For noise free recordings, record directly from the speaker voice coil terminals of the radio or TV receiver. For this purpose, a patch cord is available from your Audiomatic dealer.

1. Insert the plug end of the patch cord into the RECORDING INPUT located on the rear panel of the Audiomatic.

2. Connect the patch cord alligator clips to the radio or TV receivers voice coil terminals.

3. Adjust the volume control of the radio or TV at normal room volume. Set the tone control of the radio or TV at full treble.

4. Proceed with recording as described under "To Record From Microphone".

To Record From Phonograph

1. Plug one of the phono turntable output cables into the RECORDING INPUT jack located on the rear panel.

2. Insert AC cord from phonograph into 117 V. A.C. outlet on rear panel.

3. Start turntable and proceed with recording as described under "To Record From Microphone".

Note: The microphone should not be connected to the Audiomatic when recording from another source. Also, when the recording is played back, the phono output cable should be removed from the RECORDING INPUT jack.

To Use Second Track

1. Depress the STOP button when the tape has been wound onto the take-up reel.

2. Remove take-up reel, turn over, and place on supply pan.

3. Place empty reel on take-up pan.

4. Thread tape and proceed with recording as previously described.

To Play Monaural Recordings

1. Thread tape as described under "Threading The Tape".

2. Set the SPEED knob to the speed at which the recording was made.

3. Place SPEAKER MONITOR control in the "on" position.

4. Turn the RIGHT CHANNEL-VOLUME control to minimum.

5. Press the PLAY button and adjust the LEFT CHANNEL-VOLUME and TONE controls for desired listening level.

To Play Stereophonic Tape

1. Thread tape as described under "Threading The Tape".

2. Set the SPEED knob to the speed at which the recording was made.

3. Place SPEAKER MONITOR control in the "on" position.

4. Adjust the RIGHT and LEFT VOLUME and TONE controls for desired listening level.

Sing A-Long Use With Phono

1. Place a record on the turntable and plug one of the phono output cables into the jack on the back panel marked RECORDING INPUT.

2. Insert microphone plug into the jack on the back panel marked SING A-LONG.

3. Start the turntable and adjust the LEFT CHANNEL-VOLUME control for desired listening level.

4. Sing into the microphone and adjust the RIGHT CHANNEL-VOLUME control until the sounds coming from the right-hand speaker blend with the music coming from the left-hand speaker.

Sing A-Long Use With Tape

In addition to accompanying phonograph records, you can record monaural selections, then play the tape and narrate at the same time.

1. Play the tape in the normal manner, adjusting LEFT CHANNEL-VOLUME control.

2. Plug microphone into jack marked SING A-LONG, sing into microphone and advance RIGHT CHANNEL-VOLUME control to the point where your voice blends with the music.

Caution: You cannot record your voice along with the taped program. If the RECORD button is depressed, the tape will be erased.

To Use As Public Address System

With the STOP button pressed down, speak directly into the microphone, setting the LEFT CHANNEL-VOLUME and TONE controls for desired listening level and tone.

Caution: Hold the microphone as far away as possible from the left speaker to prevent squeal due to acoustic feedback.

DISASSEMBLY INSTRUCTIONS

To Remove Unit From Case (Refer to Exploded View)

1. Remove push-on type speed shift knob (3), the top and bottom of dual control knobs (14), (16), (22), and (23), and the dummy dual control knobs (20) and (24).

2. Remove the two screws, (9) and (10), from the front escutcheon (11). Remove escutcheon.

3. Remove screw (5) from rear escutcheon (6). Remove escutcheon.

4. Remove tape guide post (15).

5. Remove screws (18) that mount the front escutcheon mounting brackets.

6. Remove the two screws holding the unit in the cabinet (located at top of storage compartment).

7. Remove baseplate overlay (12).

8. Remove the two screws, located at front of baseplate, holding unit in cabinet.

9. Remove the four screws holding "U" shaped bracket in storage compartment. Remove "U" shaped bracket from storage compartment.

10. Remove the four screws holding the two sub-panels to the rear panel.

11. Push the two sub-panels through the holes in the rear of the cabinet.

12. Lift tape transport and amplifier assembly partially out of cabinet. Unplug four speaker leads and speaker monitor plug before removing unit completely.

To Remove Amplifier From Transport Mechanism

1. Remove the motor and power transformer plug from the amplifier chassis.

2. Remove the four head leads from the play-record head terminals.

3. Remove two screws from each end of amplifier chassis.

4. Carefully lift the amplifier away from the transport mechanism and disconnect the play-record switch arm link (104).

MECHANICAL ADJUSTMENTS

Pressure Pad Adjustment (Refer to Exploded View)

1, Remove front escutcheon (11).

2. Depress the PLAY button. Do not turn the Audiomatic "on".

3. Use a pencil type postal scale and check the amount of pressure necessary to just pull the right-hand pad away from the play-record head (57). The test should be made at the right-hand end of the pressure pad mounting spring. If necessary, adjust locked adjustment screw (42) until a reading of 1 3/4-oz. ±1/4-oz. is obtained.

4. The guide post pressure pad (left-hand pad) is adjusted by bending the pressure pad spring (35). Adjust for minimum pressure against tape.

Erase Head Adjustment

1. With tape properly threaded, turn recorder "on" and depress the RECORD button. Allow tape to run for a few seconds then turn recorder "off", but leave RECORD button depressed.

2. With front escutcheon (11) and rear escutcheon (6) removed, check erase head (52) to see if it is parallel with the tape.

3. Check to see if the top edge of the tape coincides with the top end of the diagonal slot in the erase head

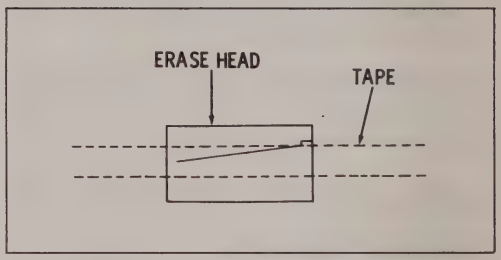


Fig. 3. Erase head tape path.

(junction of long diagonal slot and short vertical slot). See Figure 3. To adjust the level of the tape, loosen set screw (44) and rotate tape guide post (45) to move tape up or down. See Exploded View.

Brake Shoe Adjustment (Refer to Exploded View)

1. With all pushbuttons in the "up" position, the brake pads (90) should clear brake drums (107 and 109) by approximately 1/8".

2. Depress the STOP button while observing the brake pads. Both brake pads must contact the brake drums at the same time and with equal pressure.

3. If necessary, adjust by bending brake spring (91).

CLEANING

The majority of defects, other than wear or breakage, can be traced to dirty surfaces. The play-record head (57), capstan, and pressure roller (67) are subject to an accumulation of tape coating oxide, which is worn off the tape as it passes these parts. This accumulation should be periodically removed since it will cause faint recording and poor playback. Wipe these surfaces carefully with a clean cloth. If dirt is caked or hard and will not come off with a dry cloth, dampen cloth with alcohol or lighter fluid.

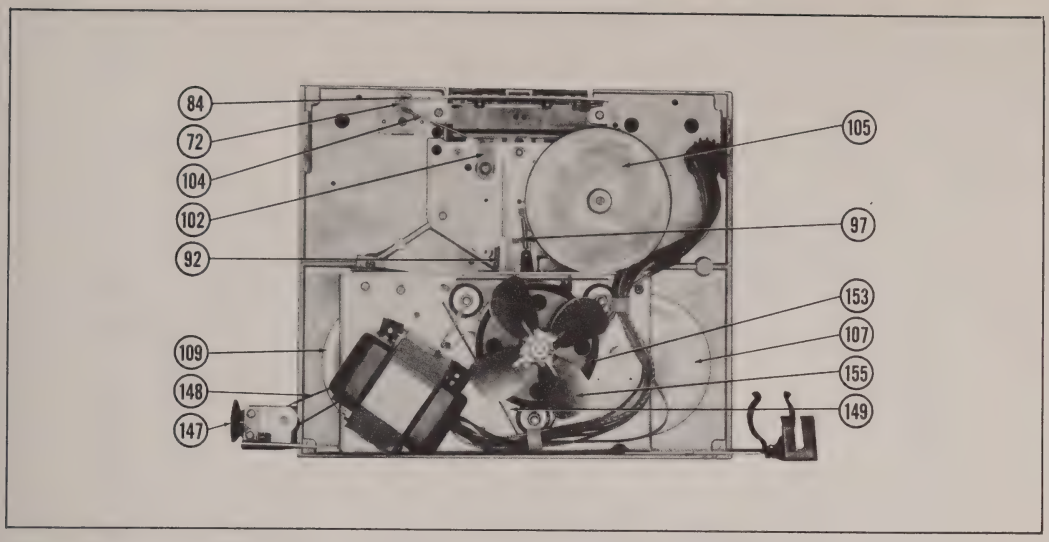


Fig. 4. Bottom view of transport mechanism.

LUBRICATION

All rotating parts are provided with generous sizeoilitebearings which are factory lubricated. Under normal use no further lubrication is necessary. In heavy duty service, the following parts should be lubricated once a year with a drop of # 10 motor oil:

1. The top and bottom motor bearings.
2. The capstan bearing.
3. Pressure roller (67) bearings.
4. All idler and drive wheel bearings.
5. The reel pan bearings.

The basic rule is - do not over lubricate. Oil must be kept off all rubber idlers, belts, and periphery of flywheel and off parts that might transfer oil to them. Always wipe excess lubricant from parts that have been lubricated.

An occasional cleaning out of foreign matter under the pushbuttons is desirable, and a drop of oil on the sliding lever members is advisable.

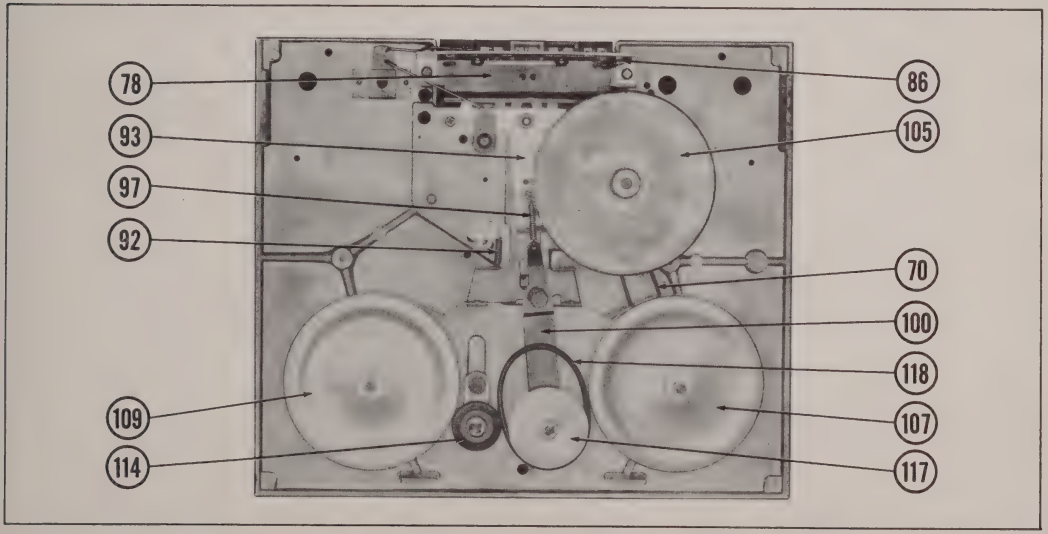


Fig. 5. Bottom view of transport mechanism - motor mounting plate removed.

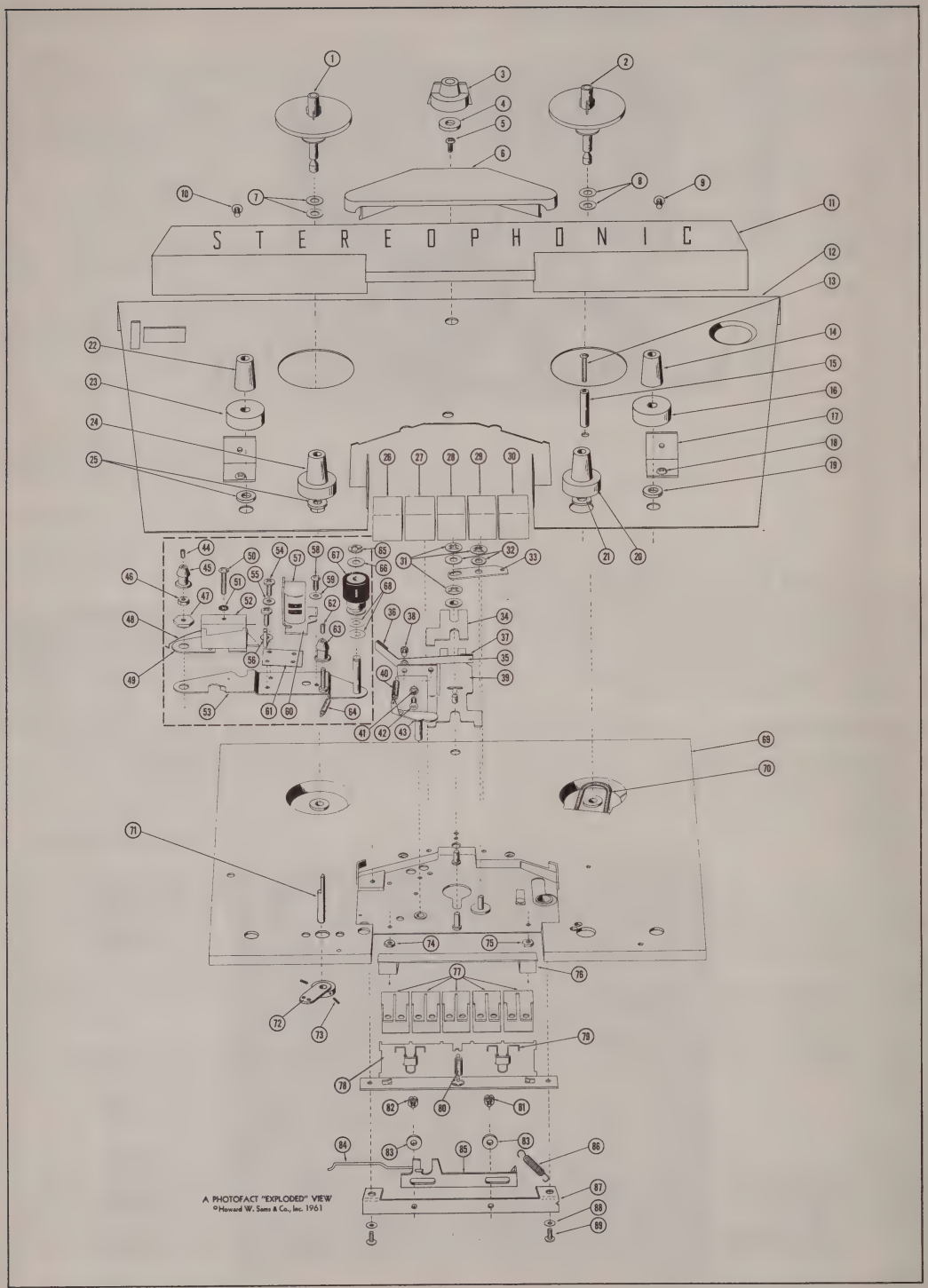


Fig. 6A. Exploded view of parts above baseplate.

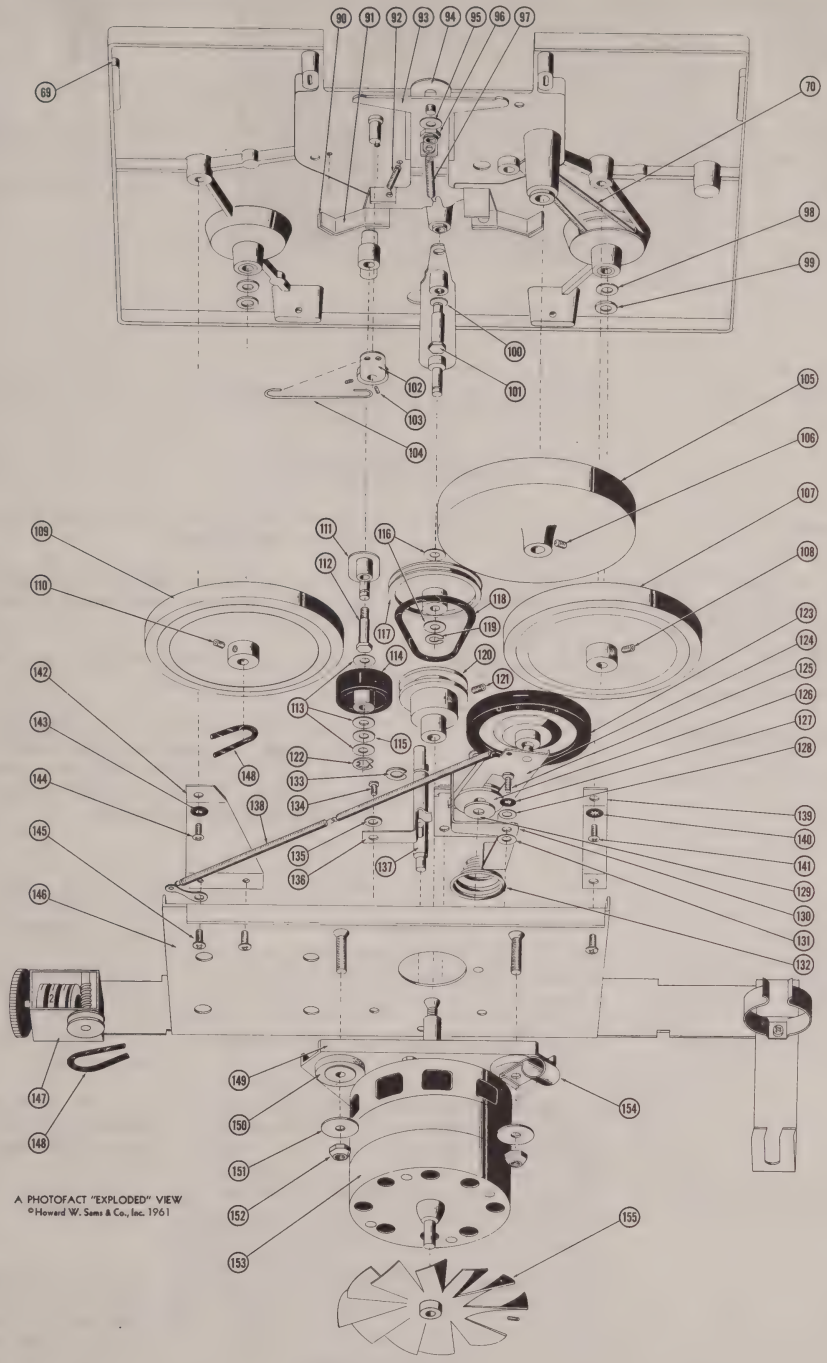


Fig. 6 B. Exploded view of parts below baseplate.

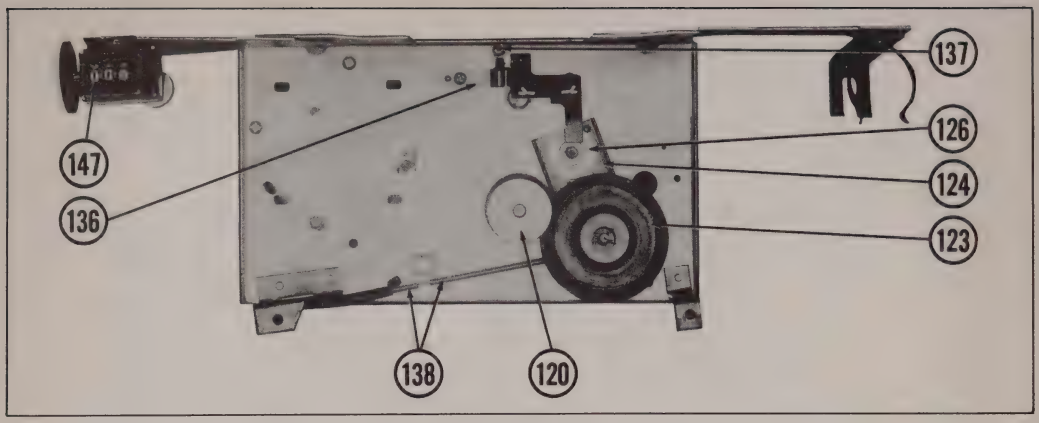


Fig. 7. Top view of motor mounting plate.

ELECTRICAL ADJUSTMENTS

Hum Adjustment

Place unit in PLAY position; Left Channel-VOLUME at maximum and Left Channel-TONE at full bass. Connect a VTVM to the LEFT Ext. Spkr. jack. Set the VTVM to AC, 3 volt scale, with a 3.3 ohm load resistor across the meter. Adjust hum control (R3) for minimum deflection on meter.

Play-Record Head Alignment

1. Remove front escutcheon (11) and rear escutcheon (6).

2. Clean pole pieces of play-record head (57) with alcohol or lighter fluid.

3. Thread alignment tape on recorder. Turn Left Channel-VOLUME to maximum, and Left Channel-TONE to full treble.

4. Connect a VTVM to LEFT Ext. Spkr. jack. Set the meter to AC, 3 volt scale.

5. Place recorder in PLAY position, 7 1/2-inch per second speed. Decrease VOLUME to point where output is 1-volt on meter. Turn play-record head adjustment screw (57, Fig. 2) until maximum point of deflection on meter is obtained.

TROUBLE CHART

Symptom	Cause	Remedy
Push buttons fail to latch into position.	1. Lock plate spring (80) disconnected or broken.	1. Connect or replace spring (80).
No drive in Play or Record.	1. Idler tension springs (138) disconnected or broken.	1. Connect or replace springs (138).
	2. Idler slide plate (124) binding on bushing (126), thus preventing idler wheel (123) from moving forward.	2. Check slide plate (124) and bushing (126) for burrs. Clean with alcohol.
Tape fails to wind on take-up reel during Play or Record.	1. Reel drive spring (70) loose, disconnected, or broken.	1. Connect or replace spring (70).
	2. Reel pan shaft (2) binding.	2. Clean foreign matter from bearing surface and shaft with a clean cloth. Lubricate with one drop of # 10 motor oil.
No Fast Forward or Rewind.	1. Idler lever tension spring (97) disconnected or broken, thereby not actuating idler lever (100).	1. Connect or replace spring (97).

TROUBLE CHART (Cont'd)

Symptom	Cause	Remedy
	2. Idler drive belt (118) broken or not properly connected.	2. Replace idler drive belt (118).
Tape spills when Stop button is depressed during fast Forward or Rewind.	1. Brake shoes out of adjustment.	1. See "Brake Shoe Adjustment" under Mechanical Adjustments.
	2. Brake pads worn out or missing.	2. Replace brake pads.
"Wow" during operation of recorder.	1. Brake return spring (92) disconnected or broken.	1. Connect or replace spring (92).
	2. Check all driving surfaces for oil or foreign matter.	2. Clean with a cloth and alcohol.
"Flutter" during operation of recorder.	1. Dirty play-record head (57), pressure pads, capstan shaft or pressure roller (67).	1. Clean as described under "Cleaning".
No erase or erase is incomplete.	1. Erase head tension spring (40) disconnected or broken.	1. Connect or replace spring (40).
	2. Erase head (52) not adjusted properly.	2. See "Erase Head Adjustment" under Mechanical Adjustments.
Does not record.	1. Faulty microphone or cord.	1. Replace if necessary, after checking recorder with another type of input.
	2. Faulty input jack.	2. Check and replace if necessary.
	3. Faulty tube.	3. Check tubes.
	4. Open play-record head (57).	4. Check continuity. After checking for continuity, demagnetize head.
Motor and amplifier inoperative.	1. Power supply defect.	1. Check voltages per schematic.
	2. Damaged power cord.	2. Repair or replace.
	3. Defective On-Off switch.	3. Replace switch.

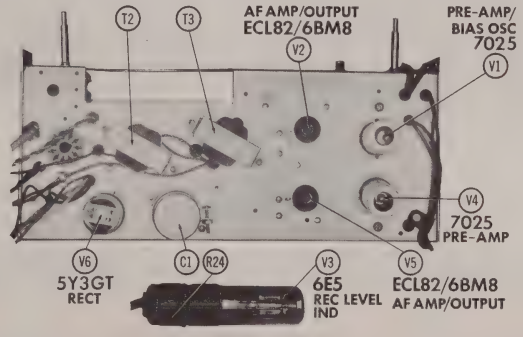


Fig. 8. Top view of amplifier.

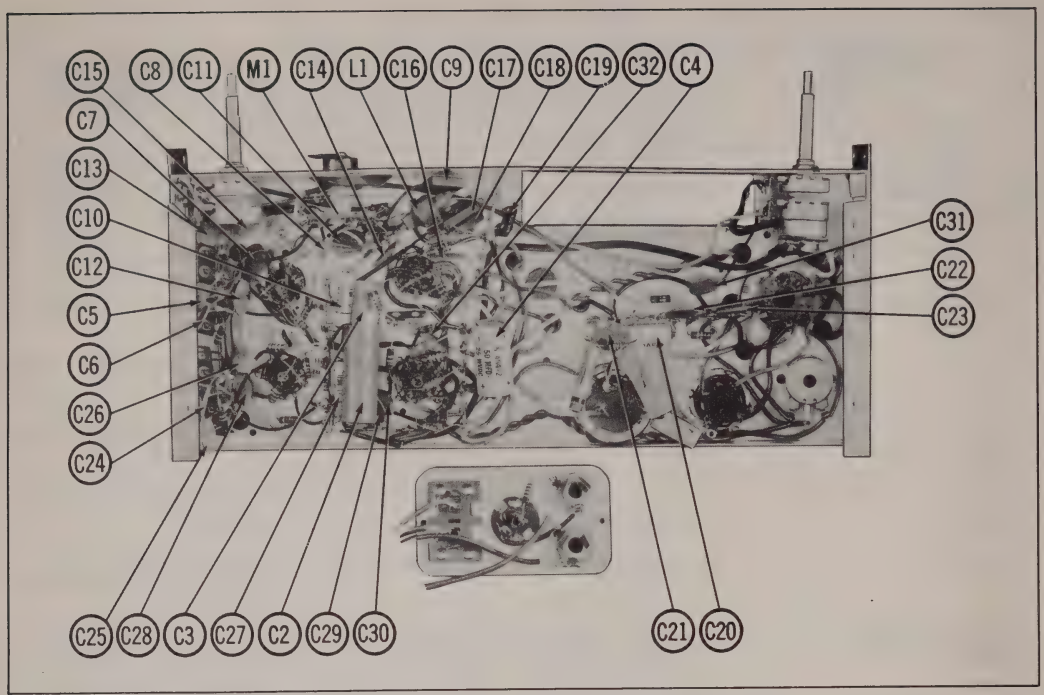


Fig. 9. Bottom view of amplifier showing capacitor locations.

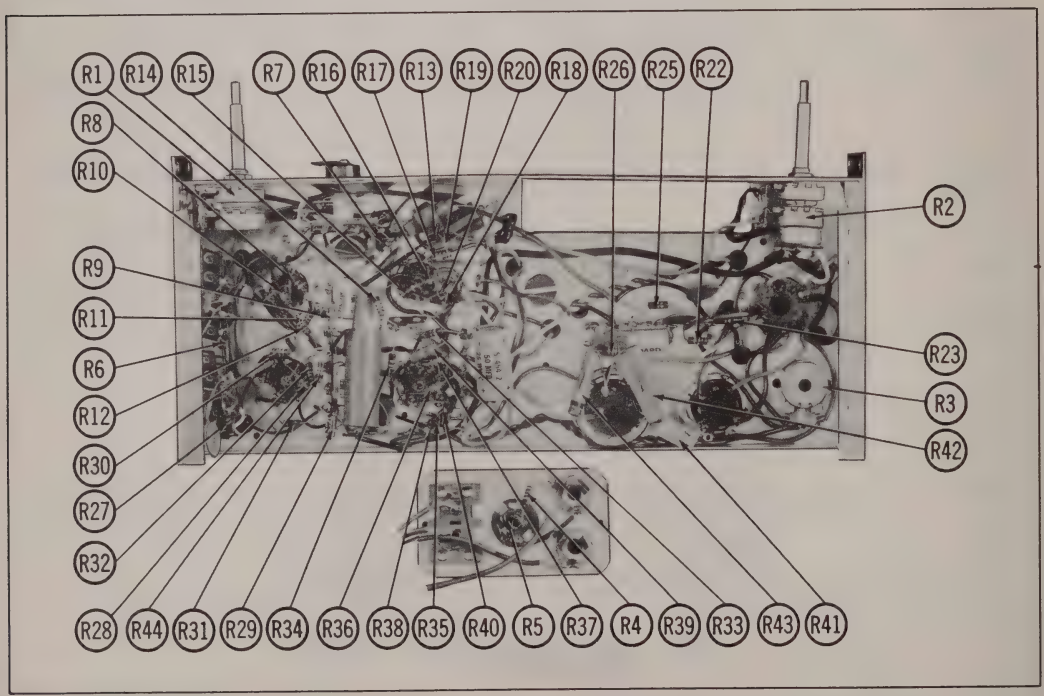
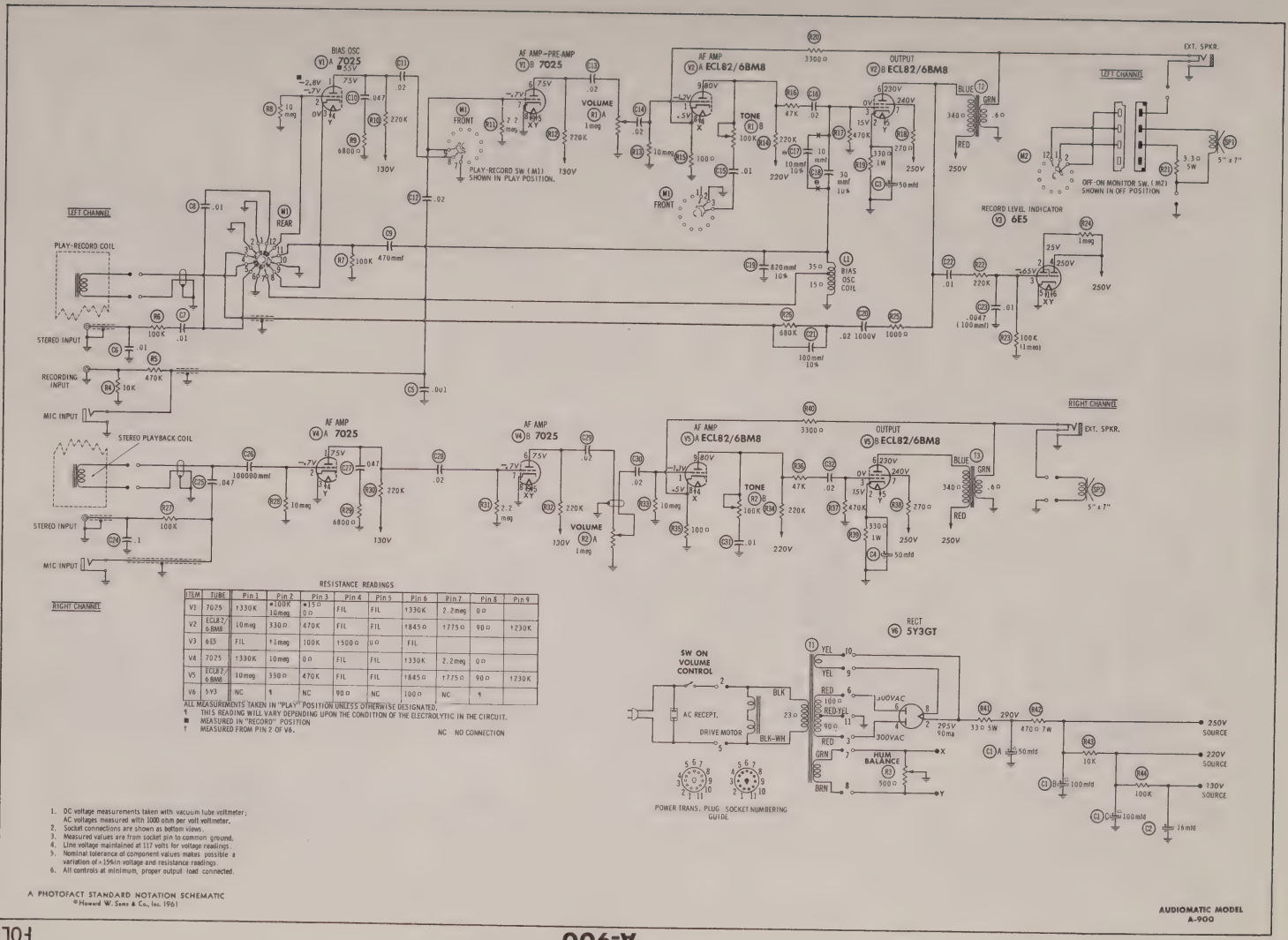


Fig. 10. Bottom view of amplifier showing resistor locations.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7025	†330K	*100K 10meg	*150 0Ω	FIL	FIL	†330K	2.2meg	0Ω	
V2	ECL82/ 6BM8	10meg	330Ω	470K	FIL	FIL	†845Ω	†775Ω	90Ω	†230K
V3	6E5	FIL	†1meg	100K	†500Ω	0Ω	FIL			
V4	7025	†330K	10meg	0Ω	FIL	FIL	†330K	2.2meg	0Ω	
V5	ECL82/ 6BM8	10meg	330Ω	470K	FIL	FIL	†845Ω	†775Ω	90Ω	†230K
V6	5Y3	NC	¶	NC	90Ω	NC	100Ω	NC	¶	

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
■ MEASURED IN "RECORD" POSITION
† MEASURED FROM PIN 2 OF V6.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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AUDIOMATIC MODEL A-900

Fig. 11. Schematic of Audiomatic A-900.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	C-13.318-3	Nylon Reel Pan & Shaft Ass'y.
2	C-13.318-3	Nylon Reel Pan & Shaft Ass'y.
3	C-13.448	Speed Shift Knob
4	73-2254-3	Felt Washer
5	57-4C-606-4	# 6-32 x 3/8" O.H.M.S.
6	D-13.450-1	Rear Escutcheon
7	73-2340-1	Varnish Impregnated Washer
8	73-2340-1	Varnish Impregnated Washer
9	57-7C-804-4	# 8-32 x 1/4" T.H.M.S.
10	57-7C-804-4	# 8-32 x 1/4" T.H.M.S.
11	C-35.1419-1	Front Escutcheon Ass'y.
12	D-35.1456-1	Baseplate Overlay Silk Screen Ass'y.
13	57-6C-615-5	# 6-32 x 1" T.H.M.S.
14	C-13.447-1	Dual Control Knob, Top
15	B-32.282	Tape Guide Post
16	B-35.1435-1	Dual Control Knob, Bottom
17	B-19.1683-1	Front Escutcheon Mtg. Brkt.
18	57-7C-804-1	# 8-32 x 1/4" T.H.M.S.
19	73-2254-3	Felt Washer
20	C-13.446	Control Knob, Dummy Dual
21	73-2254-3	Felt Washer
22	C-13.447-1	Dual Control Knob, Top
23	B-35.1435-1	Dual Control Knob, Bottom
24	C-13.446	Control Knob, Dummy Dual
25	73-2254-3	Felt Washer
26	B-35.1369-1	Push Button Ass'y., Rewind
27	B-35.1369-2	Push Button Ass'y., Record
28	B-35.1369-3	Push Button Ass'y., Stop
29	B-35.1369-4	Push Button Ass'y., Play
30	B-35.1369-5	Push Button Ass'y., Fast Forward
31	B-33.412	Push-On Stud Nut, 3/16" Stud
32	73-2241-148F	Flat Washer
33		Playback Actuating Lever
34	B-19.868	Record Slide Plate
35	B-19.892	Pressure Pad Spring
36	B-31.334	Felt Pad
37	B-31.334	Felt Pad, Play-Record Hd.
38	57-1C-603-1	# 6-32 x 3/16" B.H.M.S.
39	C-19.839-2	Playback Slide Plate
40	B-31.361	Erase Head Tension Spring
41	48-410-1	# 6-32 Hex. Nut
42	57-16C-606-1	# 6-32 x 3/8" R.H.M.S.
43	B-35.882-1	Record Actuating Lever Ass'y.
44	57-3439-0	# 6-32 x 3/16" Bristol Hd. Set Screw
45	B-32.300	Tape Guide Post
46	48-410-1	# 6-32 Hex. Nut
47	B-32.260	Tape Guide Post Spacer
48	B-31.446-2	Erase Head Return Spring
49	B-19.1410-1	Erase Head Mtg. Plate
50	57-16B-613-0	# 6-32 x 13/16" R.H.M.S.
51	73-2233-5	# 6 Int. Lockwasher
52	C-35.756	Erase Head Ass'y.
53	B-35.1278	Pinch Roller Plate Ass'y.
54	57-1C-603-1	# 6-32 x 3/16" B.H.M.S.
55	73-2231-4	# 6 Int. Lockwasher
56		Tape Guide Lug
57	B-36.254	1/4 Track Play-Record Head
58	57-16C-404-1	# 4-40 x 1/4" R.H.M.S.
59	73-2241-134	Flat Washer, Steel
60	B-19.989	Mounting Bracket, Record Head
61	B-19.990	Spring, Record Head
62	57-3439-0	# 6-32 x 3/16" Bristol Hd. Set Screw
63	B-32.309	Tape Guide Post, Right
64	B-31.360	Pinch Roller Tension Spring
65	B-33.418-2	"E" Ring, 3/16" Shaft
66	B-28.163	Linen Washer
67*	B-33.404*	Pressure Roller
68	B-16.104	Shim Washer, Brass
69	D-35.1436-1	Baseplate & Bearing Ass'y.
70	B-31.351	Reel Drive Tension Spring
71	B-32.485	Record Lock Shaft
72		Record Lock Lever
73		Set Screw, Bristol
74		Hex Nut
75		Hex Nut
76	B-19.858-1	Pushbutton Retainer Bracket
77		Pushbutton Lever
78	B-19.859	Pushbutton Hinge Bracket
79	B-31.337	Pushbutton Return Spring
80	B-31.343	Locking Plate Spring
81	57-21C-804-1	# 8-32 x 1/4" B.H.M.S., Sems
82	57-21C-804-1	# 8-32 x 1/4" B.H.M.S., Sems
83	B-32.291	Shouldered Washer
84	B-31.498	Record Lock Link
85	B-19.1699	Record Lock
86	B-31.338	Record Lock Return Spring
87	B-19.1364-1	Record Lock Mtg. Plate
88	73-2231-5	# 8 Int. Lockwasher
89	57-6C-806-1	# 8-32 x 3/8" R.H.M.S.
90		Brake Pad, Felt
91	B-35.1070-1	Brake Spring Ass'y.
92	B-31.338	Brake Return Spring
93	B-35.1046	Shift Plate Ass'y.
94	B-35.835	Brake Slide Plate Ass'y.
95	73-2241-148F	Flat Washer, Steel
96	48-2221	# 10-32 Hex, Elastic Stop Nut
97	B-31.339	Idler Lever Tension Spring
98	73-2340-1	Varnish Impregnated Washer
99	73-2248-39	Phenolic Washer
100	B-35.1051	Idler Lever Ass'y.
101	B-32.275-1	# 8-32 Hex Hd. Shouldered Screw
102	B-35-1452	Switch Lever Ass'y.
103	57-3698-0	# 8-32 x 3/16" Bristol Hd. Set Screw
104	B-31.333	Switch Arm Link
105	C-13.257-1	Flywheel
106	57-3589-1	# 8-32 x 1/4" Bristol Hd. Set Screw
107	C-35.1050-1	Brake Drum & Bushing Ass'y.
108	57-3589-1	# 8-32 x 1/4" Bristol Hd. Set Screw
109	C-35.1050-1	Brake Drum & Bushing Ass'y.
110	57-3589-1	# 8-32 x 1/4" Bristol Hd. Set Screw
111	B-35.1044	Sub Idler Plate Ass'y.
112	B-32.275-1	# 8-32 Hex Hd. Shoulder Screw
113	B-28.163	Linen Washer
114	B-33.405	Sub Idler
115	73-2254-6	Felt Washer
116	B-28.163	Linen Washer
117	B-35.1066	Sheave Pulley Ass'y.
118*	B-28.181*	Idler Drive Belt
119	B-33.418-2	"E" Ring, 3/16" Shaft
120	B-32.288	Motor Pulley
121	57-3589-1	# 8-32 x 1/4" Bristol Hd. Set Screw
122	B-33.418-2	"E" Ring, 3/16 Shaft
123*	B-33.408*	Rubber Bonded Idler, 2 1/2" Dia.
124	B-35.1064-1	Idler Slide Plate Ass'y.

MECHANICAL PARTS LIST (Cont'd)

Ref. No.	Part No.	Description
125	57-6C-806-1	# 8-32 x 3/16" R.H.M.S.
126		Idler Slide Bushing
127	73-2231-5	# 8 Int. Lockwasher
128	73-2241-143	Flat Washer, Steel
129		Flat Washer, Steel
130	B-19.1431-1	Idler Throw-Out Lever
131	B-32.291-1	Shouldered Washer
132	B-31.327	Idler Lift Compression Spring
133	B-33.407-1	"C" Washer
134	57-1C-603-1	# 6-32 x 3/16" B.H.M.S.
135	73-2231-4	# 6 Int. Lockwasher
136	B-19.961	Spring Clip
137	C-35.816-1	Speed Control Shaft Ass'y.
138	B-31.324	Idler Tension Spring, (2 req.)
139	B-19.862	Angle Brkt. for Mtg. Drive Ass'y.

Ref. No.	Part No.	Description
140	73-2231-5	# 8 Int. Lockwasher
141	57-6C-805-1	# 8-32 x 5/16" R.H.M.S.
142	B-19.863	Drive Mtg. Plate Bracket
143	73-2231-5	# 8 Int. Lockwasher
144	57-6C-805-1	# 8-32 x 5/16" R.H.M.S.
145	57-6C-805-1	# 8-32 x 5/16" R.H.M.S.
146	D-35.1438	Drive Mtg. Plate & Bracket Ass'y.
147	B-33.536	Digital Counter
148 *	B-28.175 *	"O" Ring
149		Motor Mtg. Plate
150		Shock Mount
151	B-33.411	Flat Washer
152	48-2221	# 10-32 Elastic Stop Nut
153	35.1053-2	Motor Ass'y.
154	B-33.534	Nylon Cable Clamp
155	B-33.643	4" Fan Blade

* Ref. No. 67, Pressure Roller, WALSCO Part #1457.
* Ref. No. 118, Idler Drive Belt, WALSCO Part #1410-07.
* Ref. No. 123, Rubber Bonded Idler, WALSCO Part #1430.
* Ref. No. 148, "O" Ring, WALSCO Part #1410-07.

CABINET PARTS LIST

Part No.	Description
C-35.1375-1	Handle Plate Assembly
C-35.1376-1	Handle Assembly
C-35.1417-2	Monitor Switch Harness Ass'y.
C-35.1450-1	Baffle Assembly
B-19.864-2	Cabinet Fastener Clips
20-2089-1	Plastic Beading, White
C-30.363-1	5" x 7" Speaker, 3.2 ohm
33.630-1	Plastic Bumper, White, 3/8"
33.630-2	Plastic Bumper, White, 3/4"
48-1C-20-0	#1/4-20 Hex Nut
48-2151	#8-32 Tinnerman Push-On Nut
48-2220-1	#8-32 x 11/32 Keps Hex Nut
57-43C-608-4	#6 x 1/2 F.H.W.S.
57-43C-820-0	#8 x 1 1/4 F.H.W.S.
57-46C-612-4	#6 x 3/4 R.H.W.S.
57-66A-508-4	#5 x 1/2 R.H.S.M.S.
57-66A-606-0	#6 x 3/8 R.H.S.M.S.
57-3550	#8-32 x 1 1/4 Wing Shank Screw
73-2241-137	Flat Washer
87-3170-1	Catch, Brass
503-193-1	Covering Material (Outside)
503-193-2	Covering Material (Inside)

Part No.	Description
503-193-3	Covering Material (Inside R.H.)
503-193-4	Covering Material (Inside L.H.)
503-193-5	Covering Material (Bottom)
503-193-6	Covering Material (Case R.H.)
503-193-7	Covering Material (Case L.H.)
503-193-8	Covering Material (Inside Compt.)
507-852	Front Mounting Rail
507-1026	Side Mounting Rail, R.H.
507-1027	Side Mounting Rail, L.H.
507-1028	Rear Mounting Rail
509-231	Block
510-6-49	Glue Block, 1/2 x 1/2 x 4
510-78	Glue Block, 1/2 x 1/2 x 4
515-1349	Front Panel
515-1350	Side Panel, R.H.
515-1351	Side Panel, L.H.
515-1352	Rear Panel
515-1353	Top Panel
515-1354	Bottom Panel
518-65	Partition Panel
520-100	Filler
537-83	Speaker Baffle

ACCESSORY STEREO PHONO TURNTABLE
MODEL P-902 PARTS LIST

Part No.	Description
B-19.1681	Handle Plate
504-25	Motor Board
B-11.287	Slide Switch, S.P.D.T.
B-20.241-1	Line Cord w/Plug, 6', Gray
B-23.239	Terminal Strip
B-33.599-4	Shielded Cord & Concentric Plug, 60", Gray
B-33.618-2	Tone Arm Assembly (Black)
B-33.620-3	3 Speed Motor w/8" Turntable
105-222	P.G. Butt Connector
35.1372-1	Handle Plate Assembly
C-35.1376-3	Handle Assembly
20-2089-1	Plastic Beading (White)
33.630-1	Plastic Bumper (White) 3/8"
48-1C-21-0	#1/4-20 Hex Nut
57-43C-608-4	#6 x 1/2 F.H.W.S.
57-66A-508-4	#5 x 1/2 R.H.S.M.S.
73-2241-137	#5/8 Flat Washer
87-3164-2	Tack, Brass Plt.
87-3170-2	Catch, Brass Plt.

Part No.	Description
503-192-1	Covering Material (Top)
503-192-2	Covering Material (Inside Lid)
503-192-3	Covering Material (Bottom)
504-25	Motor Board
507-1007-3	Mounting Rail, Rear
507-1007-4	Mounting Rail, Front
507-1007-5	Mounting Rail, Sides
515-1274	Rear Panel
515-1275	Side Panel
515-1276	Top & Bottom Panel
515-1355	Front Panel
8-2499-1	Cabinet Assembly
D-35.1446-1	Motor Board Final Assembly
57-44C-612-4	#6 x 3/4 O.H.W.S.
73-2240-115	#6 Finishing Washer
B-3.108-2	Paper Tubular Cap. 2.5 mfd @ 50V
B-33.528-1	Jack, Open Circuit, 2 Cond. (1/4" Bushing)

ACCESSORY DUAL EXTENSION SPEAKERS
MODEL S-901 PARTS LIST

Part No.	Description
503-195-1	Covering Material
514-8-2	Dowel Rod 4 5/8"
C-35.1384-2	Dowel Rod Assembly
B-31.495	Hinge Pin
B-32.483	Handle Mounting Post
8-2500-1	Speaker Case Assembly
C-35.1444-1	Baffle Board Final Ass'y. (Left)
C-35.1445-1	Baffle Board Final Ass'y. (Right)
1-33.572-1	Molded Plug Assembly (Gray)
48-2213-1	#3/8-32 Hex Nut, Double Chamfered
57-44C-816-4	#8 x 1 O.H.W.S.
73-2240-116	#8 Finishing Washer
73-2243-70	Flat Washer
48-2151	#8-32 Tinnerman, Push-On
57-3549-0	#8-32 x 1 Wing Shank Screw
145-125-1	Plastic Grille (Gold)
537-84	Speaker Baffle (Right)
537-85	Speaker Baffle (Left)
C-35.1443-1	Baffle Assembly (Left)
C-35.1442-1	Baffle Assembly (Right)
B-3.108-2	Paper Tub. Cap. 2.5 mfd @ 50 V
C-30.356-3	3 1/2" Sq. P.M. Speaker, 8 ohm

Part No.	Description
D-30.366-2	8" P.M. Speaker, 8 ohm
48-1C-15-1	#8-32 Hex Nut
57-46C-506-1	#5 x 3/8 R.H.W.S.
73-2231-5	#8 Int. Lockwasher
B-19.1680	Handle Plate
C-35.1376-2	Handle Assembly
35.1379-1	Handle Plate Assembly
33.630-2	Plastic Bumper (White) 3/4"
48-1C-21-0	#1/4-20 Hex Nut
57-43C-608-4	#6-1/2 F.H.W.S.
57-66A-508-4	#5 x 1/2 R.H.S.M.S.
73-2241-137	Flat Washer
87-3170-1	Catch
503-194	Covering Material
507-973	Locating Rail
507-1037	Mounting Rail
507-1038	Mounting Rail
510-6-49	Glue Block, 1/2" x 1/2" x 4"
515-1213	Bottom Panel
515-1215	Front & Rear Panel
515-1217	Side Panel, R.H.
515-1218	Side Panel, L.H.
515-1356	Top Panel
537-84	Baffle Board, Right
537-85	Baffle Board, Left

AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Preamp. -Bias Osc. -AF Amp.	7025
V2	AF Amp. -Output	ECL82/6BM8
V3	Record Level Ind.	6E5
V4	Stereo AF Amp.	7025
V5	Stereo AF Amp. -Output	ECL82/6BM8
V6	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AUDIOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	▲50	300	C-5.421-11	AFH2-41-50	B0331	XC3-41	FP227.7	TMD-2435	TVLS-3584*
B	■100	300		PRSI680	BRI0035		TC79	TD-50-450	
C	▲100	300							
C2	16	200	C-5.483-2	PRSI565	BRI625	QT1-8	TC54	TD-16-250	TVA-1507
C3	50	25	B-5.464-2	PRSI265	BBR50-25	QT1-15	TC29	TD-50-25	TVA-1206
C4	50	25	B-5.464-2	PRSI265	BBR50-25	QT1-15	TC29	TD-50-25	TVA-1206

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.001		SI 1000	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C6	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	470		1469-00047		5R5T47	CM-19B-471K	MCJ244	MS-347
C10	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C11	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C12	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C13	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C14	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C15	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C16	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C17	10 10%	Note 1	1469-00001	TCZ-10	22R5Q1	CM-19B-100K	MCB215	MS-41
C18	30 10%	Note 1	1469-00003	TCZ-30	22R5Q3	CM-19B-300K	CNQ-433	MS-43
C19	820 10%		1469-00082		5R5T82	CM-19B-821K	MCB251	MS-382
C20	.02 1000V		P1088N-02		CUB10S2	16DP-4-203	GEM-1012	10TM-S20
C21	100 10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-31
C22	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	.0047	Note 2	BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C24	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	.1 10V			UK10-104	H-05P1		TA-010	HY-320
C27	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C28	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C29	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C30	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C31	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20

Note 1. When C18 is 39mmf, C17 is not used.
Note 2. Some versions use 100mmf in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AUDIOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	C-8.253-2	F1-52		† QJ-1554R	■ UE4258	Volume, Left Channel
B	100K	½		R2-31				Tone, Left Channel

CONTROLS (cont)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AUDIOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R2A	1meg	½	C-8.253-1	F1-52				Volume, Right Channel
B	100K	½		R2-31		╪ QJ-1553R	▲ UE4261-S	Tone, Right Channel
C	Switch			KR-1				Power Off-On
R3A	500Ω	½	B-8.240	TT-4	B47-500-8	BII-103	PTA52L	Hum Balance
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

† "CONCENTRIKIT" Equivalent: K-5 Kit with Base Elements and Shafts:
(Not available as a factory assembled unit).
BI3-137, P1-114 (Panel)
BII-128, RI6-127 (Rear)

╪ "CONCENTRIKIT" Equivalent: K-5 Kit with Base Elements and Shafts:
(Not available as a factory assembled unit).
BI3-137, P1-114 (Panel)
BII-128, RI6-127 (Rear)
76-1 (Switch)

■ "STA-LOC" Equivalent: FBI6A, RUI5L, OSI437A, ISI875.

▲ "STA-LOC" Equivalent: FBI6A, RUI5L, OSI437A, ISI875, US-41.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	10K			
R5	470K			
R6	100K			
R7	100K			
R8	10meg			
R9	6800Ω			
R10	220K			
R11	2.2meg			
R12	220K			
R13	10meg			
R14	220K			
R15	100Ω			
R16	47K			
R17	470K			
R18	270Ω			
R19	330Ω 1W			
R20	3300Ω			
R21	3.3Ω 5W	PW5-3.3	5W-SQ-3.3	
R22	220K			
R23	100K			(1meg) *
R24	1meg			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R25	1000Ω			
R26	680K			
R27	100K			
R28	10meg			
R29	6800Ω			
R30	220K			
R31	2.2meg			
R32	220K			
R33	10meg			
R34	220K			
R35	100Ω			
R36	47K			
R37	470K			
R38	270Ω			
R39	330Ω 1W			
R40	3300Ω			
R41	33Ω 5W	PW5-33	5W-SQ-33	
R42	470Ω 7W	PW7-470	7W-SQ-470	
R43	10K 2W			
R44	100K			

* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA AUDIOMATIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	Bias Osc.	B-1.557					

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA AUDIOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V @ .85A	580VCT @ .090A DC	5V @ 2A	D-9.262		P-8175		R-112A ①	① Tape CT on 6.3V Winding
	SEC. 3	SEC. 4	SEC. 5						
	6.3V @ 2.3A								

AMP PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AUDIOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7000Ω	3-4Ω	C-9, 303-2	A-3020	A-3823	26S48	S-9Z	
T3	7000Ω	3-4Ω	C-9, 303-2	A-3020	A-3823	26S48	S-9Z	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AUDIOMATIC PART No.	QUAM PART No.	
SP1	5"x 7"	PM	3-4Ω	C-30, 363-1	57A1	
SP2	5"x 7"	PM	3-4Ω	C-30, 363-1	57A1	

MISCELLANEOUS

ITEM No.	PART NAME	AUDIOMATIC PART No.	NOTES
M1	Switch	B-11, 292	Selector (Rotary Wafer)
M2	Switch	B-11, 297	Monitor (Rotary Type)

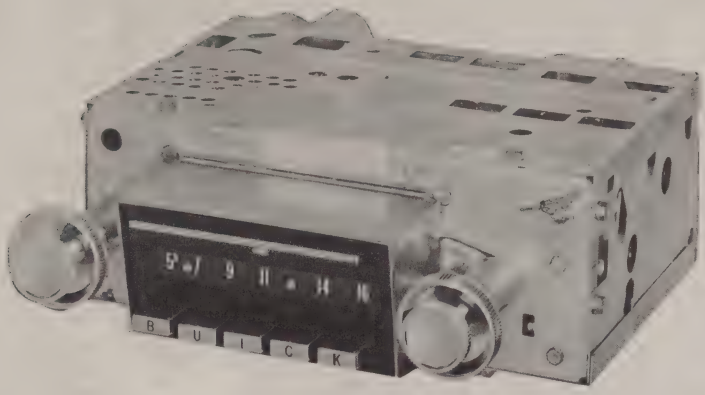
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE*

BUICK MODEL
980135

BUICK MODEL
980135



TRADE NAME	Buick Model 980135 (For 1961 Buicks)
MANUFACTURER	Delco Radio Div., General Motors Corp., Kokomo, Indiana
TYPE SET	Battery Operated 5 Tube-1 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 2.6 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	550—1600KC

BUICK MODEL
980135

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4, A5, A9, A10.. GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A6, A7, A8..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262KC (Unmod.)	High end stop.	DC probe to point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	"	"	A2, A3, A4	Adjust for maximum deflection.
	Check setting of Oscillator core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
3.	High side thru 82mmf to antenna receptacle. Low side to chassis.	1615KC	High end stop.	DC probe to point (A). Common to chassis.	A6, A7, A8	Adjust for maximum deflection.
4.	"	600KC	600KC Signal.	"	A9, A10	"
5.	"	1600KC	1600KC Signal.	"	A7, A8	"
6.	With the radio tuned to an 1100KC signal, adjust pointer adjustment so that pointer coincides with 1100KC mark on dial.					
7.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.					

PUSHBUTTON ADJUSTMENT

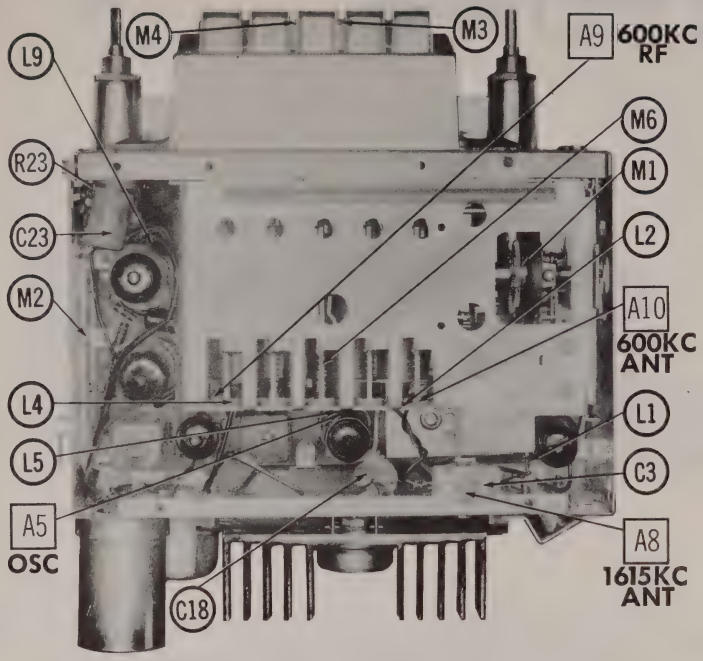
1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

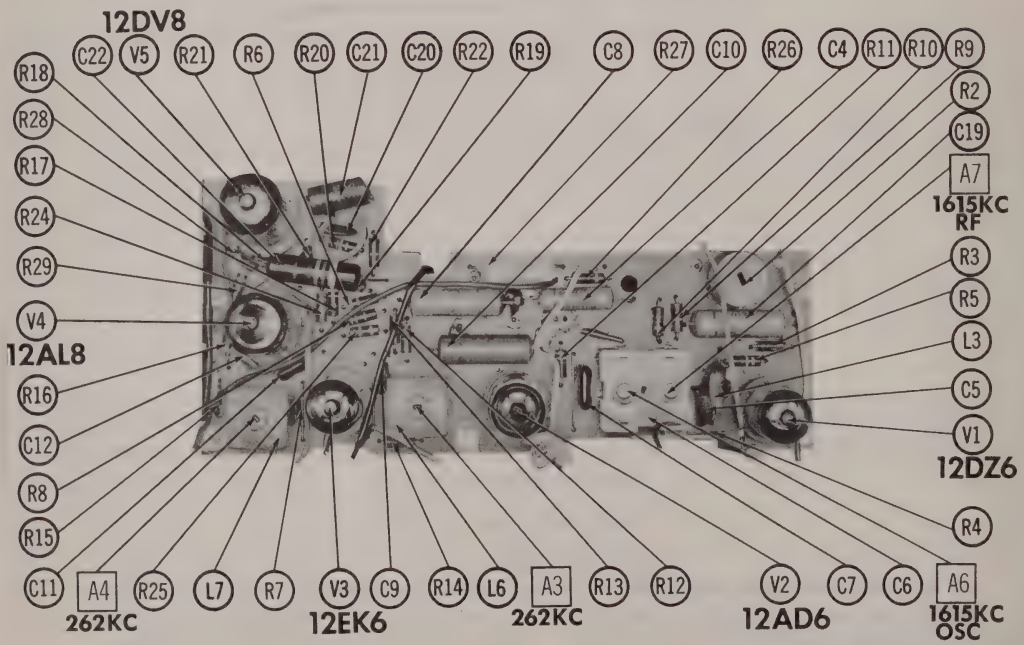
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KD929

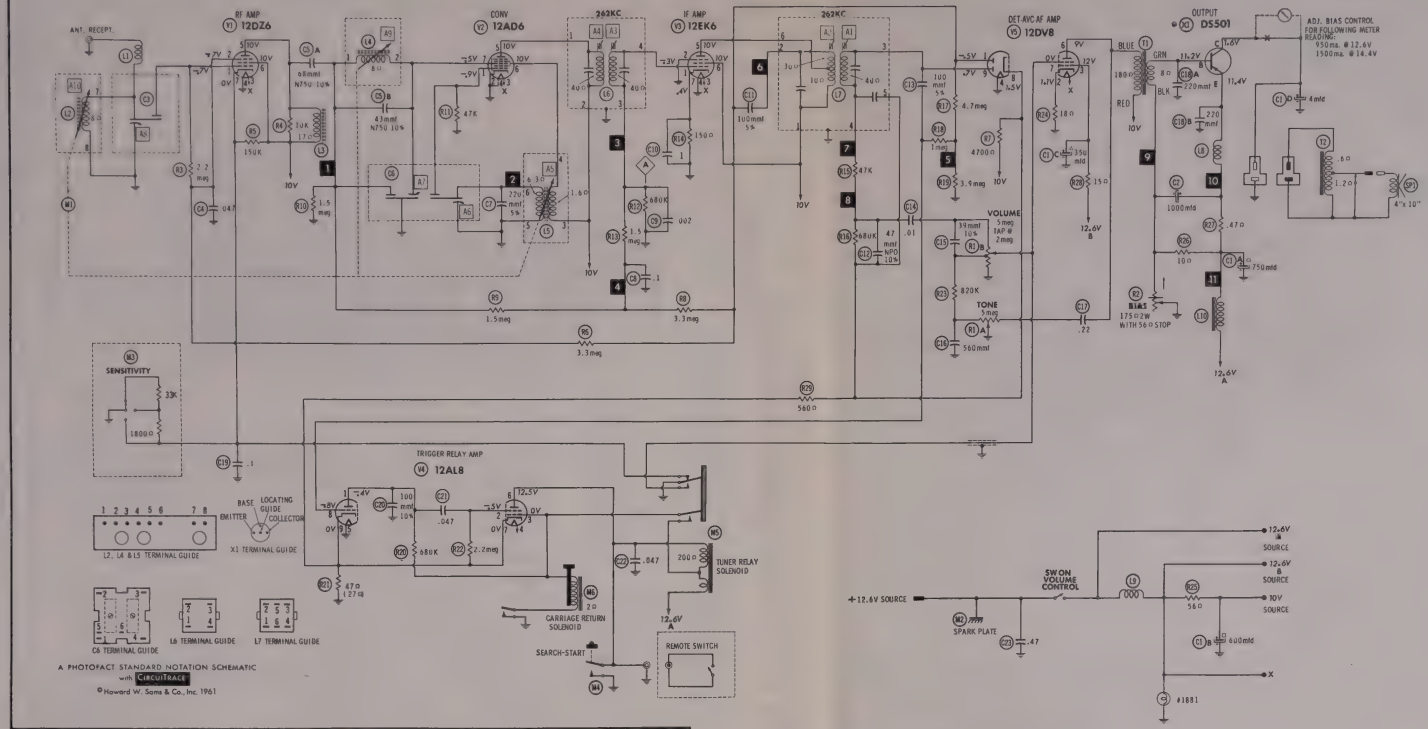
SET 558 FOLDER 6

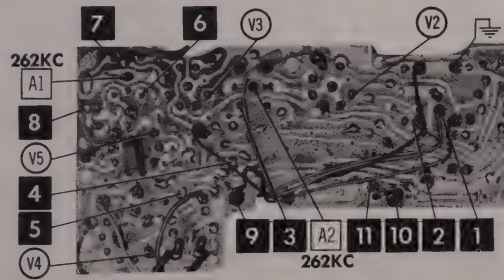


CHASSIS-TOP VIEW



PRINTED BOARD-TOP VIEW





A Howard W. Sams CIRCUITRACE Photo

PRINTED BOARD ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	8 meg	6 meg	FIL	FIL	75 Ω	60 Ω	0 Ω		
V2	12AD6	47K	0 Ω	FIL	FIL	100 Ω	60 Ω	1.2 meg		
V3	12EK6	500K	0 Ω	FIL	FIL	70 Ω	60 Ω	150 Ω		
V4	12AL8	680K	2.2 meg	2 Ω	FIL	FIL	200 Ω	47 Ω	5.6 meg	47 Ω
V5	12DV8	3 meg	18 Ω	17 Ω	FIL	FIL	240 Ω	0 Ω	590 Ω	730K

TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

◎ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

BUICK MODEL 980135

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12DZ6	V4	Trigger Relay Amp.	12AL8
V2	Converter	12AD6	V5	Det. -AVC-AF Amp.	12DV8
V3	IF Amplifier	12EK6			

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	DS501	Output	2N176		PNP Note 1.

Note 1. When replacing, apply silicone grease between transistor and heat sink. Tighten mounting screws securely. Check bias adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	▲750	16	7273728	AFH4-20-75	D0187		WP401.5		TVLS-4204*
B	■600	16							
C	▲350	16							
D	4	11.5							
C2	1000	1	7271557	PRS1130	BR1000-6	QT1-32	PETA120	TD-1000-6	TVA-1104

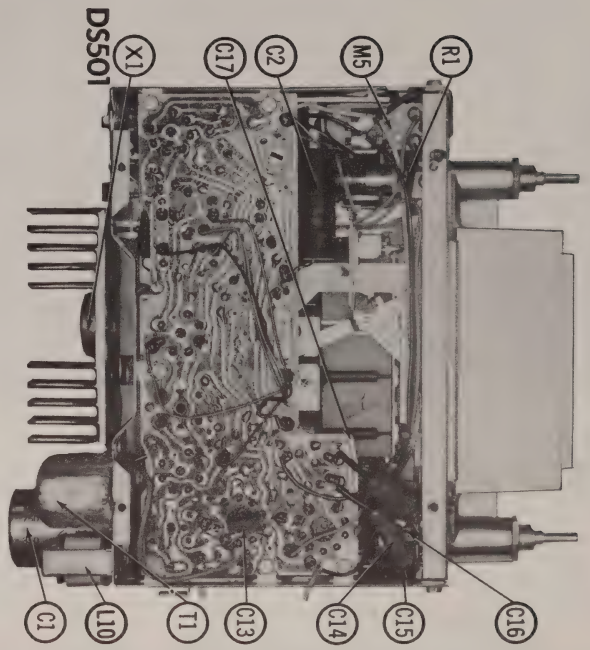
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3		#7276220						
C4	.047 75V		P288N-047	DD-503	CUB2S47	IDP-2-473	GEM-4147	2TM-S47
C5A	68 N750 10%		N750-DI 68	TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
B	43 N750 10%		N750-DI 39	TCN-43	C10Q43U	CCTN-390	CN7-439	10TCU-Q39
C6		#7273693						
C7	220 5%		1469-00022	TCZ-220	22R5T22	CM-19B-221J	CNO-322	MS-322
C8	.1 75V		P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10
C9	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-S20
C10	.1 75V		P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P10
C11	100 5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-31
C12	47 NPO 10%		NPO-DI 47	TCZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C13	100 5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-31
C14	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C15	39 10%		1469-00039	TCZ-39	22R5Q39	CM-19B-390K	CNO-439	MS-439
C16	560		DI-560	DD-561	L10T56	CCD-561	B-356	10TS-T56
C17	.22 100V		P288N-22		CUB2P22	1DP-3-224	GEM-2022	2TM-P22
C18A	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
B	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C19	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P10
C20	100 10%		1469-0001	TCZ-100	22R5T1	CCD-101	MCE235	MS-31
C21	.047 100V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C22	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C23	.47 100V		P288N-47		CUB2P47	1DP-4-474	GEM-2047	2TM-P47

Delco Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5meg		7277155				■ UE4251-S	Tone Volume
B	5meg							
	2meg Tap							
C	Switch							Power Off-On Bias
R2	175Ω	2(WW)	1221422*					
	56Ω Stop							

* Temperature Compensated.
■ "STA-LOC" Equivalent: FT56L, RU56T26, OS1750, IS2375, US41

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	2.2meg			
R4	10K			
R5	150K			
R6	3.3meg			
R7	4700Ω			
R8	3.3meg			
R9	1.5meg			
R10	1.5meg			
R11	47K			
R12	680K			
R13	1.5meg			
R14	150Ω			
R15	47K			
R16	680K			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R17	4.7meg			
R18	1meg			
R19	3.9meg			
R20	680K			
R21	47Ω			(27Ω) *
R22	2.2meg			
R23	820K			
R24	18Ω			
R25	56Ω			
R26	10Ω			
R27	.47Ω			Pt. #7270608
R28	15Ω			
R29	560Ω			

* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke(6.5uh)	7255738	BC-565	4610	RTC-8520	T858	
L2	Ant.	1221138					
L3	RF Choke (1.8MH)	7269684	BC-514	4664	RTC-8533	T875	
L4	RF	1221138					
L5	Osc.	1221151					
L6	Input IF	1221257	BC-344	13-PH1	RTC-8644	T855	
L7	Output IF	1221253	BC-424				
L8	RF Choke(1.4uh)	1217846					
L9	Hash Choke(1.4uh)	1217846					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L10	1A	.7Ω	.011 HY	7274342		TC-2			

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	13	1	7272822		TA-51			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
	PRI.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	10Ω Tap@ 3-4Ω	1221522		TA-50			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4"x10"	PM	3-4Ω	7277408	410A2	

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner		Series F3, Pushbutton Type, Signal Seeking
M2	Spark Plate	1221503	
M3	Switch	7277220	Sensitivity, Includes Push Bar , 33K and 1800Ω Resistors
M4	Switch	1221408	Includes Push Bar & Solenoid
M5	Relay	7270545	Tuner Operating
M6	Solenoid & Plunger Ass'y.	1221409	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Pointer	1221508	
B Pushbutton	7277126	
U Pushbutton	7277127	
I Pushbutton	7277128	
C Pushbutton	7277129	
K Pushbutton	7277130	
Knob	1199769	Tuning, Volume
Knob	1199714	Tone, Dummy

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

PHOTOFACT® Folder

CALRAD MODEL AP-35

CALRAD MODEL AP-35

CALRAD MODEL AP-35

TRADE NAME	Calrad Model AP-35
IMPORTER	California Radio & Electronics Co., 823 N. Highland Ave., Hollywood 38, Calif.
TYPE SET	AC Operated 6 Tube Audio Amplifier
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 125 Watts, 1.2 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KX801

SET 558 FOLDER 7

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C13	100 5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-31
C14	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C15	39 10%		1469-00039	TCZ-39	22R5Q39	CM-19B-390K	CNO-439	MS-439
C16	560		DI-560	DD-561	L10T56	CCD-561	B-356	10TS-T56
C17	.22 100V		P288N-22		CUB2P22	1DP-3-224	GEM-2022	2TM-P22
C18A	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
B	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C19	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P10
C20	100 10%		1469-0001	TCZ-100	22R5T1	CCD-101	MCE235	MS-31
C21	.047 100V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C22	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C23	.47 100V		P288N-47		CUB2P47	1DP-4-474	GEM-2047	2TM-P47

Delco Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5meg	½	7277155				■ UE4251-S	Tone
B	5meg	½						Volume
	2meg Tap							
C	Switch							Power Off-On
R2	175Ω	2(WW)	1221422*					Bias
	56Ω Stop							

* Temperature Compensated.
■ "STA-LOC" Equivalent: FT56L, RU56T26, OS1750, IS2375, US41

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	2.2meg				R17	4.7meg			
R4	10K				R18	1meg			
R5	150K				R19	3.9meg			
R6	3.3meg				R20	680K			
R7	4700Ω				R21	47Ω			(27Ω) *
R8	3.3meg				R22	2.2meg			
R9	1.5meg				R23	820K			
R10	1.5meg				R24	18Ω			
R11	47K				R25	56Ω			
R12	680K				R26	10Ω			
R13	1.5meg				R27	.47Ω			Pt. #7270608
R14	150Ω				R28	15Ω			
R15	47K				R29	560Ω			
R16	680K								

* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		DELCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke(6.5uh)	7255738	BC-565	4610	RTC-8520	T858	
L2	Ant.	1221138					
L3	RF Choke (1.8MH)	7269684	BC-514	4664	RTC-8533	T875	
L4	RF	1221138					
L5	Osc.	1221151					
L6	Input IF	1221257	BC-344	13-PH1	RTC-8644	T655	
L7	Output IF	1221253	BC-424				
L8	RF Choke(1.4uh)	1217846					
L9	Hash Choke(1.4uh)	1217846					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L10	1A	.7Ω	.011 HY	7274342		TC-2			

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	13	1	7272822		TA-51			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
	PRI.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	10Ω Tap @ 3-4Ω	1221522		TA-50			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4"x10"	PM	3-4Ω	7277408	410A2	

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner		Series F3, Pushbutton Type, Signal Seeking
M2	Spark Plate	1221503	
M3	Switch	7277220	Sensitivity, Includes Push Bar , 33K and 1800Ω Resistors
M4	Switch	1221408	Includes Push Bar & Solenoid
M5	Relay	7270545	Tuner Operating
M6	Solenoid & Plunger Ass'y.	1221409	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Pointer	1221508	
B Pushbutton	7277126	
U Pushbutton	7277127	
I Pushbutton	7277128	
C Pushbutton	7277129	
K Pushbutton	7277130	
Knob	1199769	Tuning, Volume
Knob	1199714	Tone, Dummy

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

PHOTOFACT® Folder

CALRAD MODEL AP-35

CALRAD MODEL AP-35

CALRAD MODEL AP-35

TRADE NAME	Calrad Model AP-35
IMPORTER	California Radio & Electronics Co., 823 N. Highland Ave., Hollywood 38, Calif.
TYPE SET	AC Operated 6 Tube Audio Amplifier
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 125 Watts, 1.2 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KX801

SET 558 FOLDER 7

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Mic 1 Preamp. - Mic 2 Preamp.	12AX7 (ECC83)*	V4	Output	6CA7 (EL34)*
V2	AF Amplifier	6AV6	V5	Output	6CA7 (EL34)*
V3	AF Amp. -Phase Inv.	12AX7 (ECC83)*	V6	Rectifier	5AR4 (GZ34)*

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	CALRAD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	①40	450		AFH4-18	D0170	XC4-13	FP476	TMQ-4637	TVL-4840
B	④10	450							
C	③10	450							
D	②20	450							
C2	10	350		PRS1620	BR1045	QT1-6	TC62	TD-10-450	TVA-1604
C3	50	50		PRS1350	BR505	QT1-15	TC39	TD-50-50	TVA-1308

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C5	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C6	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C7	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C8	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C9	270 10%		1469-00027	TCZ-270	5R5T27	CM-19B-271K	CNO-327	MS-327
C10	.002 400V		P488N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C11	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C12	.005 400V		P488N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D50
C13	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C14	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C15	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C16	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C17	.002 10%		1464-002		5R5D2	CM-19B-202K	MCB457	MS-22

CONTROLS

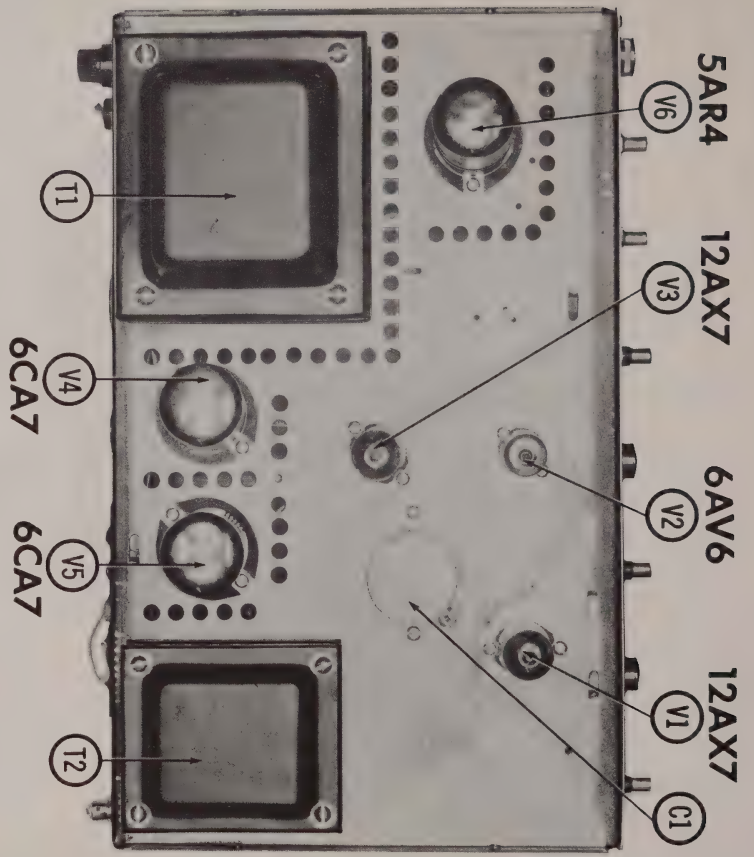
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CALRAD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	500K	½						Mic 1
R2	500K	½						Mic 2
R3	500K	½						Phono
R4	2meg	½						Bass
R5A	2meg	½						Treble
B	Switch							Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R6	3.3meg				R7	220K			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R8	3.3meg				R23	470K			
R9	220K				R24	220K			
R10	220K				R25	2200Ω			
R11	220K				R26	220K			
R12	220K				R27	150Ω			
R13	220K				R28	130Ω 10W	PW10-130	10W-SQ-130	
R14	470Ω				R29	220K			
R15	220K				R30	47K			
R16	220K				R31	3000Ω 2W			
R17	47K				R32	150Ω 1W			
R18	33K				R33	47K			
R19	100K				R34	10K 2W			
R20	220K				R35	100K			
R21	390Ω				R36	150Ω			
R22	100K 1W								

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	CALRAD PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V@ 1.2A	600VCT @ .200A DC	5V@ 1.9A						
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT @2.3A Tap@ 4.5V@ .6A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CALRAD PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	3800Ω CT	70V(150Ω) Tap@16Ω, 8Ω, 4Ω						

FUSES

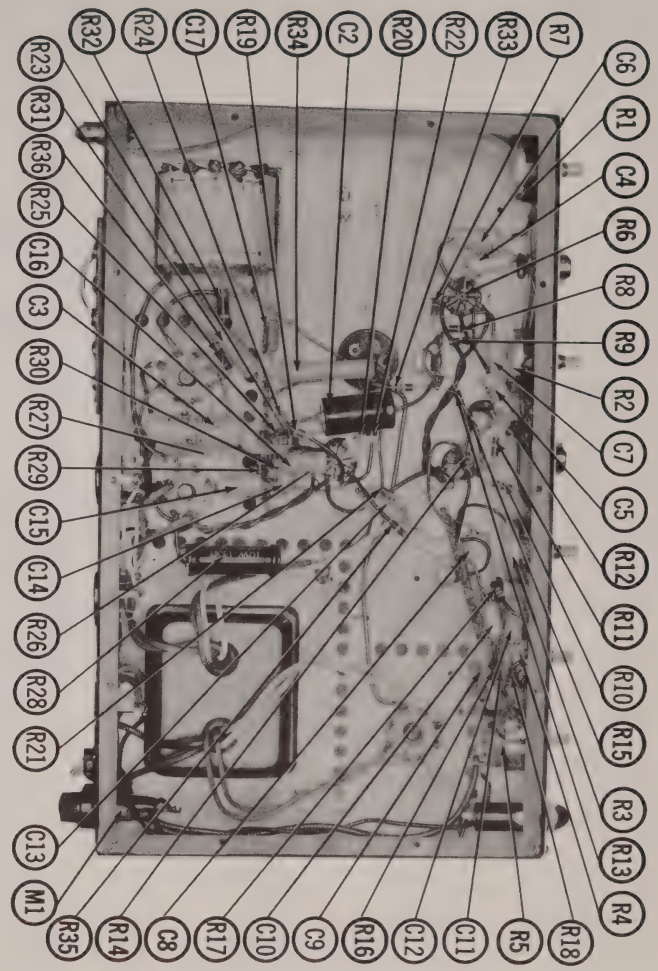
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			CALRAD PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1		2A 250V S/B			313002 (2A 250V)	342001	MDX 2	HKP

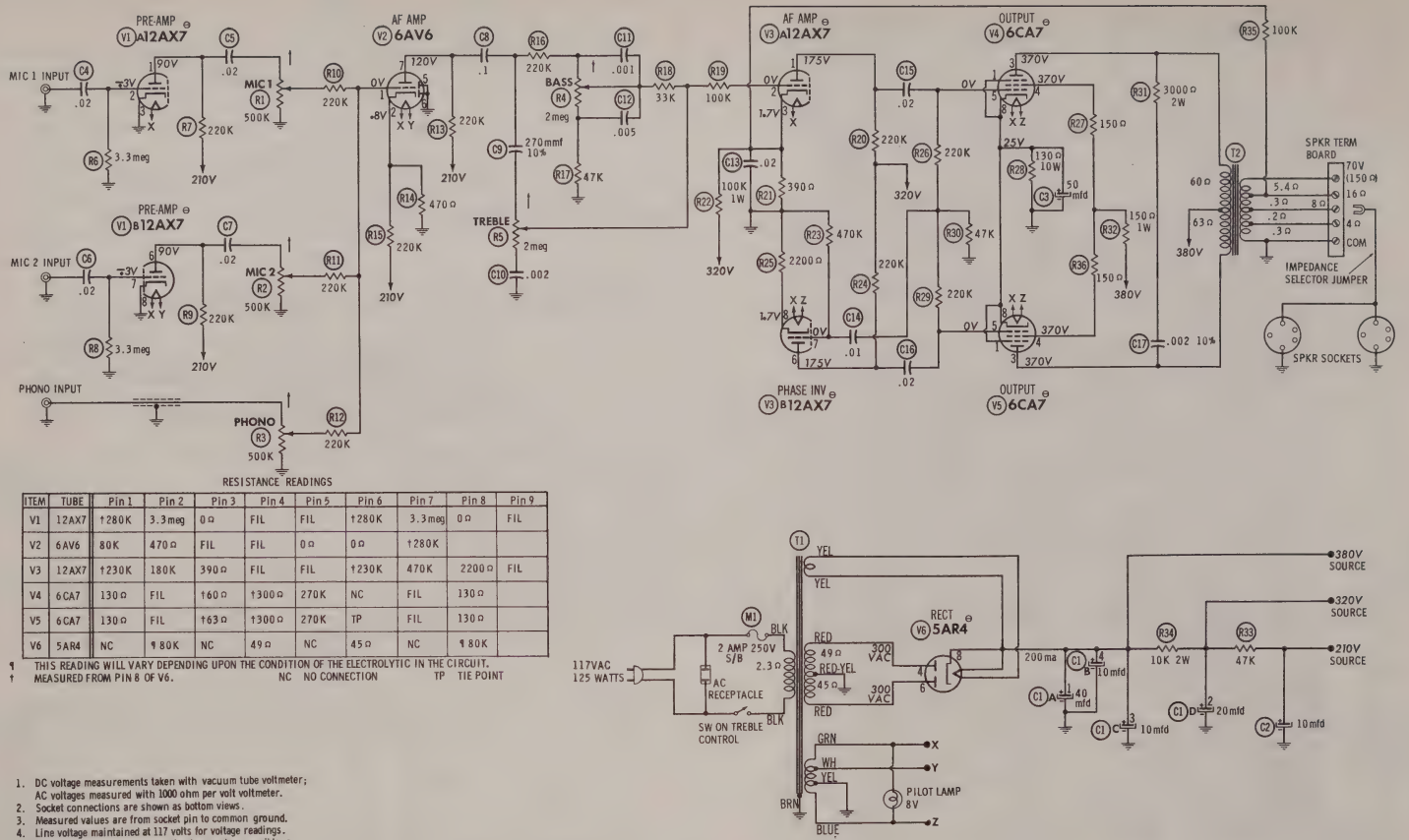
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†280K	3.3meg	0Ω	FIL	FIL	†280K	3.3meg	0Ω	FIL
V2	6AV6	80K	470Ω	FIL	FIL	0Ω	0Ω	†280K		
V3	12AX7	†230K	180K	390Ω	FIL	FIL	†230K	470K	2200Ω	FIL
V4	6CA7	130Ω	FIL	†60Ω	†300Ω	270K	NC	FIL	130Ω	
V5	6CA7	130Ω	FIL	†63Ω	†300Ω	270K	TP	FIL	130Ω	
V6	5AR4	NC	¶ 80K	NC	49Ω	NC	45Ω	NC	¶ 80K	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V6. NC NO CONNECTION TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

CALRAD MODEL AP-35

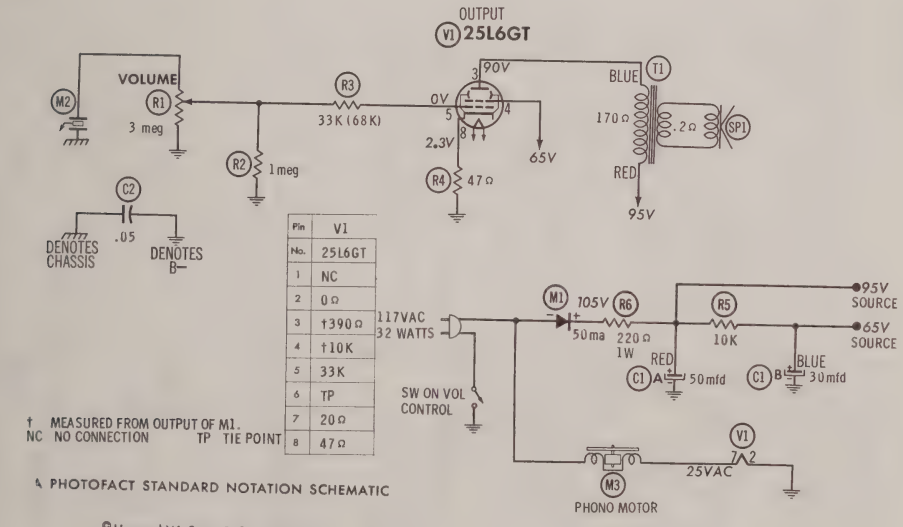
PHOTOFACT® Folder

CAPITOL MODEL 118

CAPITOL MODEL 118

TRADE NAME	Capitol Model 118
MANUFACTURER	Capitol Records, Inc., 1 S. Webster Ave., Scranton 5, Pa.
TYPE SET	AC Operated One Tube Phono Amplifier With 4 Speed Manual Record Player
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 32 Watts, .39 Amp. @117 Volts AC

CAPITOL MODEL 118



Pin No.	V1 25L6GT
1	NC
2	0Ω
3	†390Ω
4	†10K
5	33K
6	TP
7	20Ω
8	47Ω

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION TP TIE POINT

PHOTOFACT STANDARD NOTATION SCHEMATIC

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KR821

SET 558 FOLDER 8

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Output	25EH5			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	50	150	11B759	PRS2200	BBRD5315	QT2-7	TCD497	TDLD-8	TVA-2450
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C3	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	3meg	½	9B653	B-85	A47-3meg-Z	Q13-140	U57	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On
R2A	50K	½	9B639	B-31	A47-50K-S	Q11-123	U35	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	68K			(33K) *	R6	220Ω 1W			
R4	1meg				R7	5600Ω			
R5	47Ω			(68Ω) *					

* Alternate Value.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	COLUMBIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2000Ω	1-2Ω	3B258					

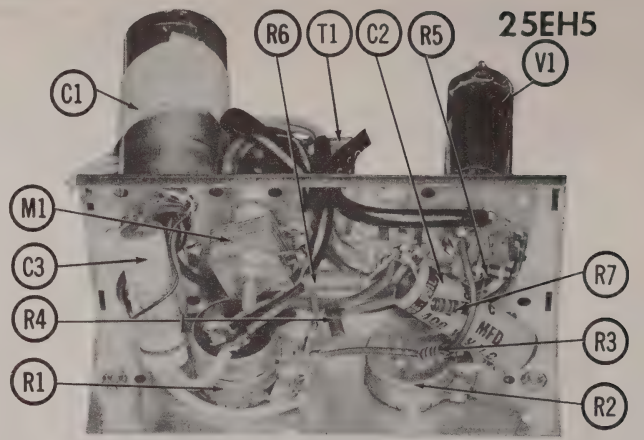
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	COLUMBIA PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	1B165	4A05	
SP2	4"	PM	3-4Ω	1B165	4A05	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT (Measured)	COLUMBIA PART No.	RCA PART No.	SARKES TARZIAN PART No.	
M1	.045A	10B603 ‡	1N1763 *	65 ‡	‡ Selenium * Silicon

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	COLUMBIA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2	DC-500		124-TS	N8-1* & N8-3*	46T	Not Req.	12THA-S	N-12THA-S	◆ Includes Tone Arm
			KR-314-T◆				T8C1-12THS◆		

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M3	Motor Idler Wheel	6B307	4 Speed, 90 Volts WALSCO Part #1472-01

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	8B546	Grey
Cabinet	17B122	Blue, Model C1205B
Cabinet	17B123	Grey, Model C1205G
Handle	18B829	Blue, Model C1205B
Handle	18B830	Grey, Model C1205G

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE*

FALCON, FORD
MODELS 12BD, 12BF

FALCON, FORD
MODELS 12BD, 12BF

MODEL 12BD (FALCON)

TRADE NAME	Ford Falcon Model 12BD (C0DF-18805E2, C0DF-18806D) for 1961 Ford Falcon Automobiles Ford Model 12BF (C1AF-18805C2, C1AF-18806K) for 1961 Ford Automobiles
MANUFACTURER	Bendix Radio Div., The Bendix Corp., Baltimore 4, Maryland
TYPE SET	Battery Operated 2 Tube -2 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery
TUNING RANGE	BROADCAST 540-1600KC RATING 1.3 Amp. @ 12.6 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6 ..... GENERAL CEMENT #8721, 8722
WALSCO #2519
A8, A9, A10 .... GENERAL CEMENT #8271, 8279, 8897
WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 9 (grid) of Converter. Low side to chassis.	262.5KC (400~ Mod.)	High end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Thru dummy (Fig.1) to antenna receptacle.	1605KC	"	"	A5, A6, A7	"
	Step 3 is not necessary unless tuner has been tampered with or associated components replaced. If necessary, back tuning cores (A8, A9, A10) out of coils but not out of coil forms. Repeat step 2.					
3.	Thru dummy (Fig.1) to antenna receptacle.	1000KC	Tuner carriage .369" from high end stop.	Across voice coil	A8, A9, A10	Adjust for maximum output. Repeat steps 2 and 4.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output.					

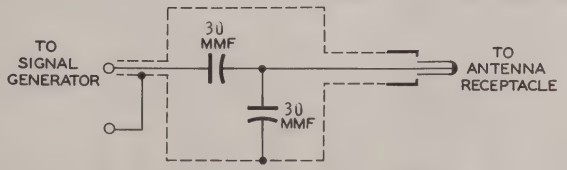


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KD893

SET 558 FOLDER 10

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amp. - Converter	12FX8	V2	IF Amp. - Det. - AF Amp.	12FR8

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	2N1287	Driver	2N591	2N362	PNP
X2	2N1227-3	Output	2N301	2N633	PNP Note 1

Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	▲450	16	2091503-2	PWH3-00-90			WP300.8 †		PCLS-3026.3 *
B	▲100	16							
C	100	16							

† Use Printed Circuit Adapter Kit FPA.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	4-75	#219083-4				462		
C3	150 10%		1469-00015	TCZ-10	22R5T15	CM-19B-151K	MCB236	MS-315
C4	33 N750		N750-DI 33	DTN-33	C10Q33U	CCTN-33	CN7-433	10TCU-Q33
C5	.1 100V		P2151N-1	DF-104	BC2P1J	1DP-2-104	ACE-401	2SE-P10
C6	10		SI-10	D6-100	L10QI	CCD-100	GP410	10TS-Q10
C7	120-340	#2091418-2						
C8	.001		BPD-001	DD-103	BYA10D1	CCD-102	B-210	5HK-D10
C9A	80 10%	#2091418-1	NPO-SI 82	TCZ-82	C10Q82C	CCTO-820	CNO-482	10TCC-Q82
B	380-445					*		
C10	51 N1500 10%	Note 1						
C11	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C12	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C13	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C15	.1 100V		P2151N-1	DF-104	BC2P1J	1DP-2-104	ACE-401	2SE-P10

Ford Part Number
* Not normally in distributor's stock.

Note 1. Value will vary (33-100mmf). Replace with original value.
Available thru distributor on order to manufacturer.

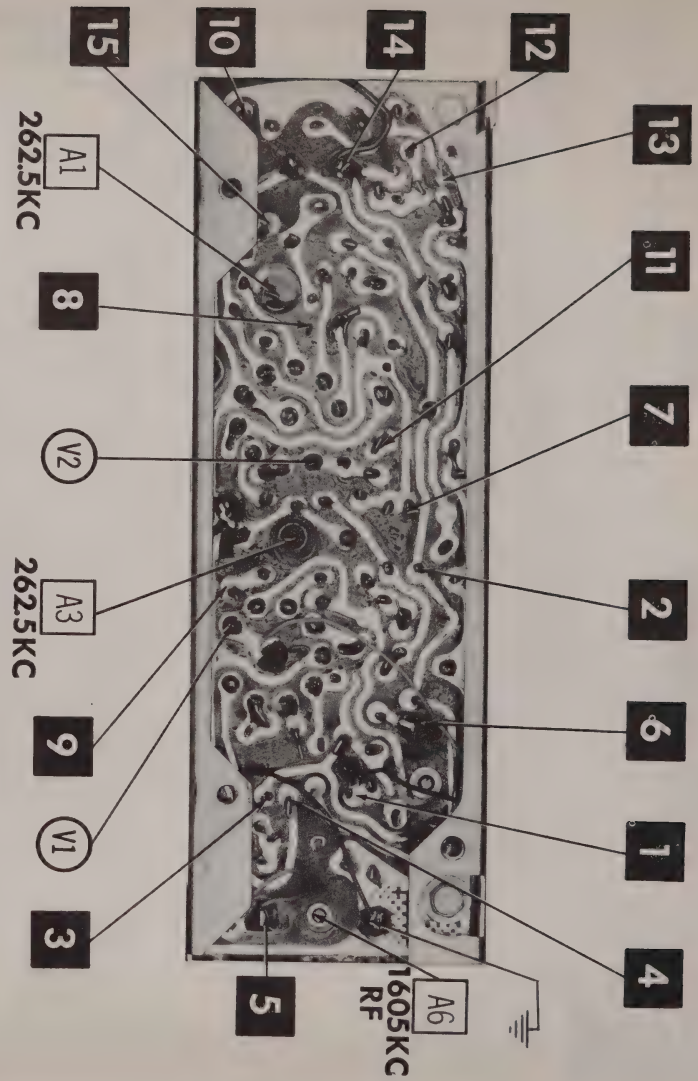
CONTROLS

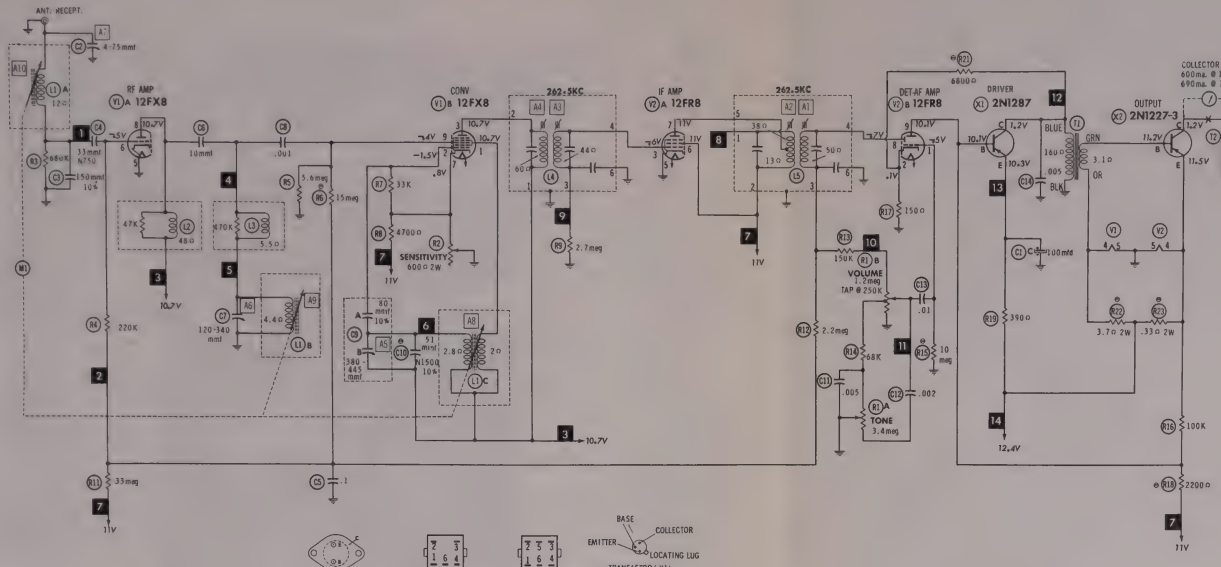
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	3.4meg	½	2091544-1					
B	1.2meg	½					UE1614-S	Tone Volume
C	250K Tap Switch							Power Off-On Sensitivity
R2	600Ω	2(WW)	219555-19		39-600	112-600	FL-600	

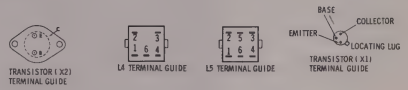
A Howard W. Sams CircuiTrace® Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



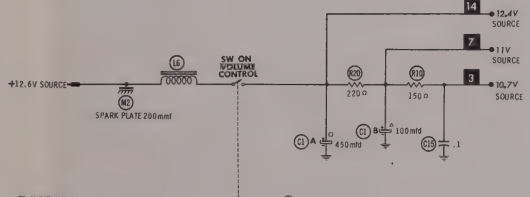


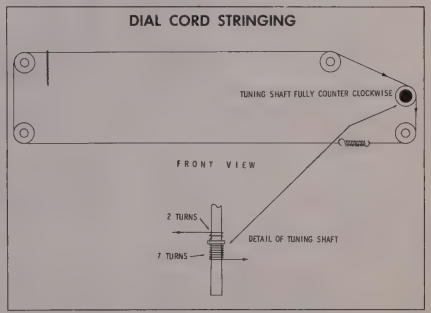


RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12FX8	370Ω	33K	400Ω	FILS	0Ω	3meg	220Ω	380Ω	4.8meg
V2	12FR8	10meg	150Ω	2.7meg	FILS	0Ω	220Ω	240Ω	1.2meg	FILS

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.





⊘ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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FALCON, FORD MODELS 12BD, 12BF

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	680K				R13	150K			
R4	220K				R14	68K			
R5	5.6meg				R15	10meg			Note 2
R6	15meg			Note 1	R16	100K			
R7	33K				R17	150Ω			
R8	4700Ω				R18	2200Ω			Note 3
R9	2.7meg				R19	390Ω			
R10	150Ω				R20	220Ω			
R11	33meg				R21	6800Ω			Note 4
R12	2.2meg				R22	3.7Ω 2W			Note 5
					R23	.33Ω 2W			Note 6

Note 1. Value varies (10-22meg). Replace with original value.
Note 2. Value varies (3.3-10meg). Replace with original value.
Note 3. Value varies (1-5.6K). Replace with original value.
Note 4. Value varies (5-15K). Replace with original value.
Note 5. Value varies (3.2-4.2Ω, Temperature Compensated). Replace with original value.
Note 6. Value varies (.3-.5Ω, Temperature Compensated). Replace with original value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BENDIX PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1A	Antenna	①					① Part of M1.
B	RF	①					② Includes 47K.
C	Osc.	①					③ Includes 470K.
L2	RF Choke	2090088-15 ②					
L3	Image Trap	2090088-14 ③					
L4	Input IF	2090907-7					
L5	Output IF	2090908-5					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L6	1.3A	.3Ω	1100 uh	2091509-2					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	6.5	1	2090815-5					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
	PRI.	BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	12Ω Tap @ 8-8Ω	2090849-5					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX PART No.	QUAM PART No.	
SP1	5" x 7"	PM	6-8Ω	2091542-1 *	57A15Z8	* Used in Model 12BD
	6" x 9"	PM	6-8Ω	2091269-6 ‡	69A2Z8.5	‡ Used in Model 12BF

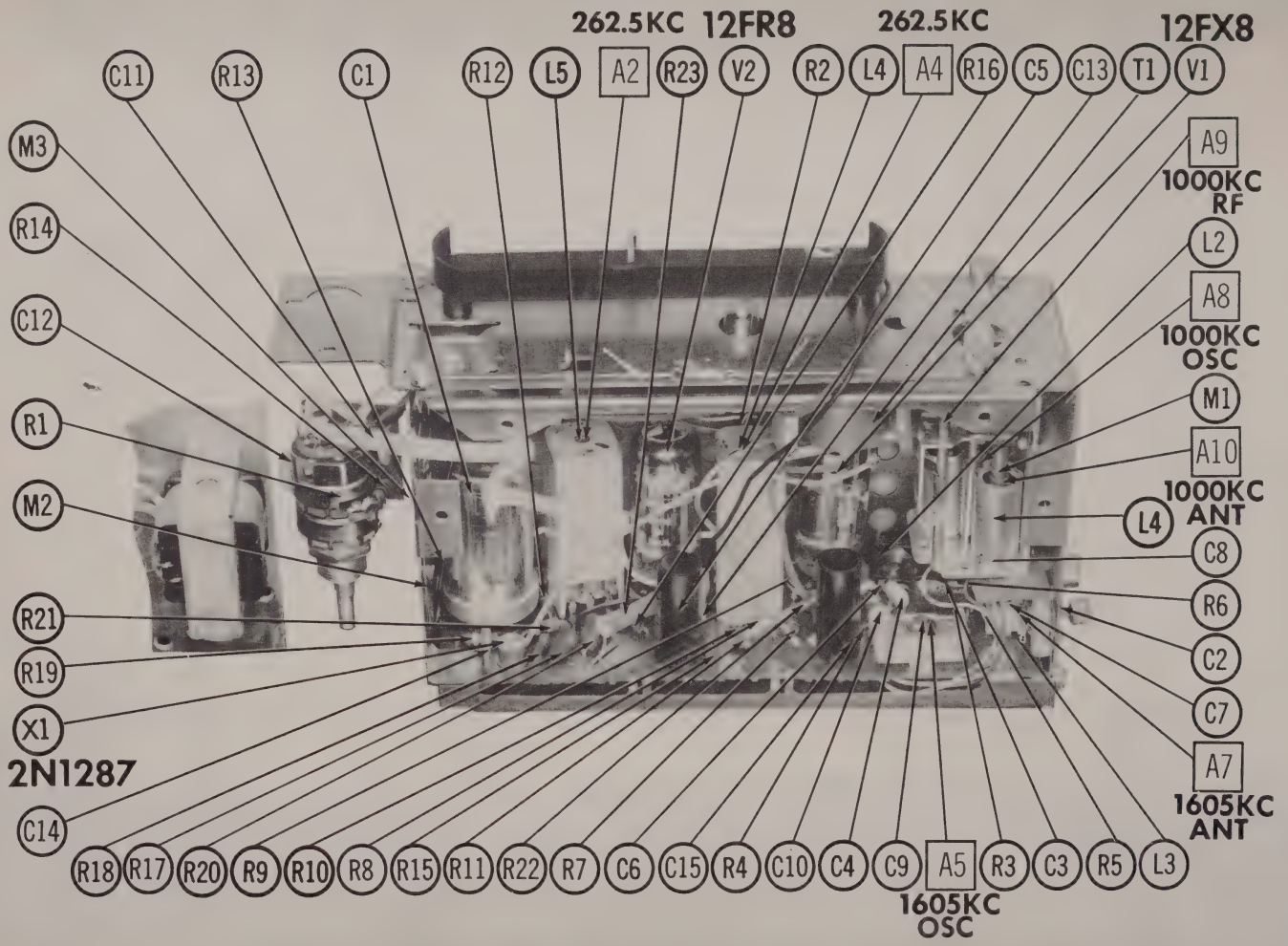
MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M1	Tuner Assembly	2091543-1	
M2	Spark Plate	220267-9	200mmf
M3	Spark Plate	220267-9	200mmf
	Printed Board	2091482-3	Large (Less Tubes)
	Printed Board	2091480-2	Small

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Glass	2090409-2	Model 12BD
Dial Glass	2091618-1	Model 12BF
Dial Pointer	2091530-1	
Knob	2090413-3	Tuning, Volume, Model 12BD
Knob	2090413-1	Tuning, Volume, Model 12BF
Knob	2090411-1	Tone, Dummy

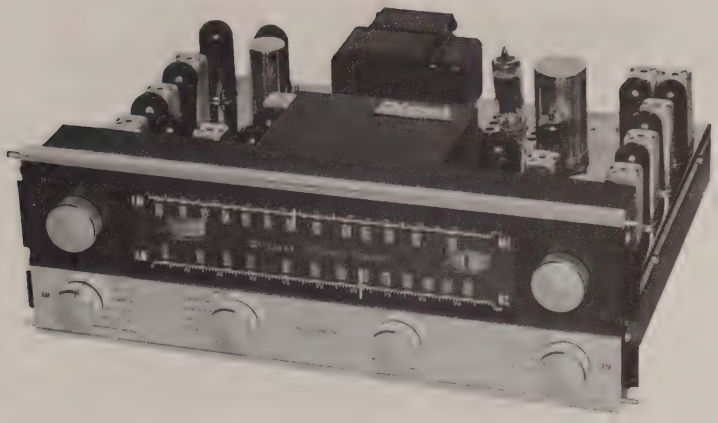


CHASSIS TOP VIEW

PHOTOFACT® Folder

McINTOSH MODEL MR-66

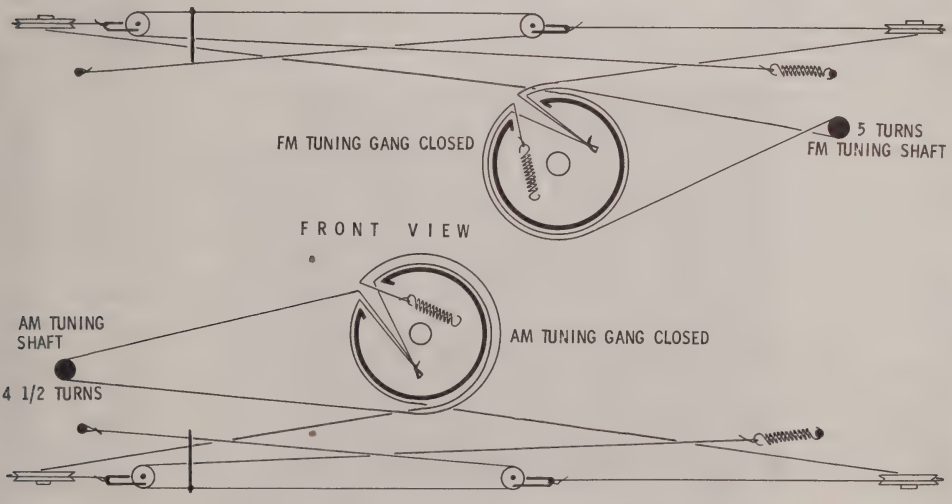
McINTOSH MODEL MR-66



McINTOSH MODEL MR-66

TRADE NAME	McIntosh Model MR-66		
MANUFACTURER	McIntosh Laboratory, Inc., 2 Chambers Street, Binghamton, N. Y.		
TYPE SET	AC Operated 18 Tube FM-AM Tuner		
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles	RATING	82 Watts, .76 Amp. @117 Volts AC
TUNING RANGES – BROADCAST	540 – 1600KC	FREQ. MOD.	88 – 108MC

DIAL CORD STRINGING



SET 558 FOLDER 11

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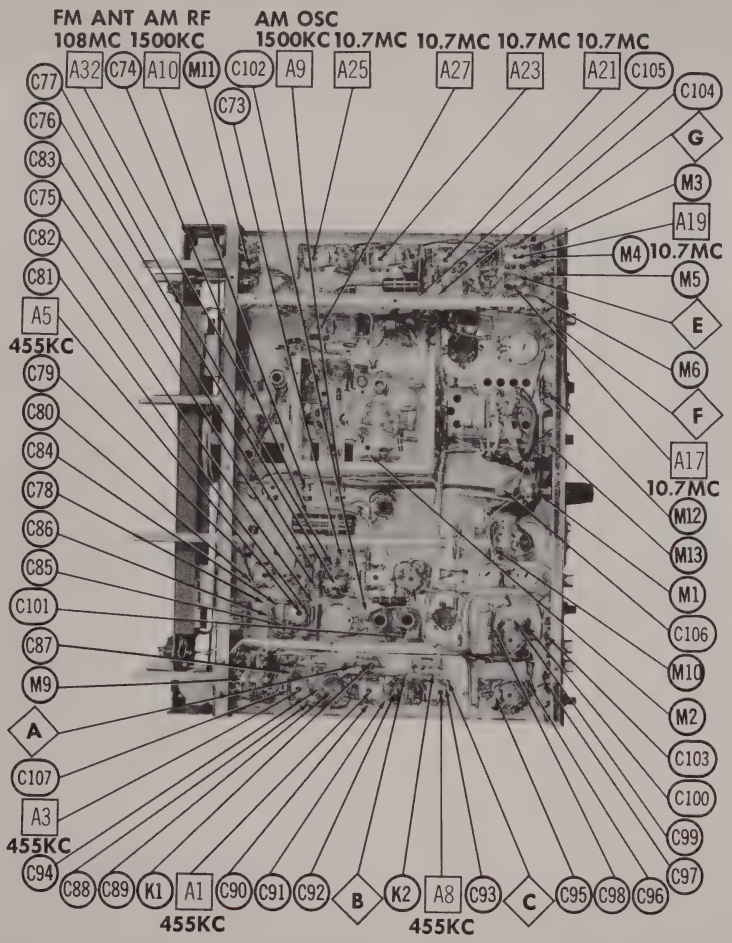
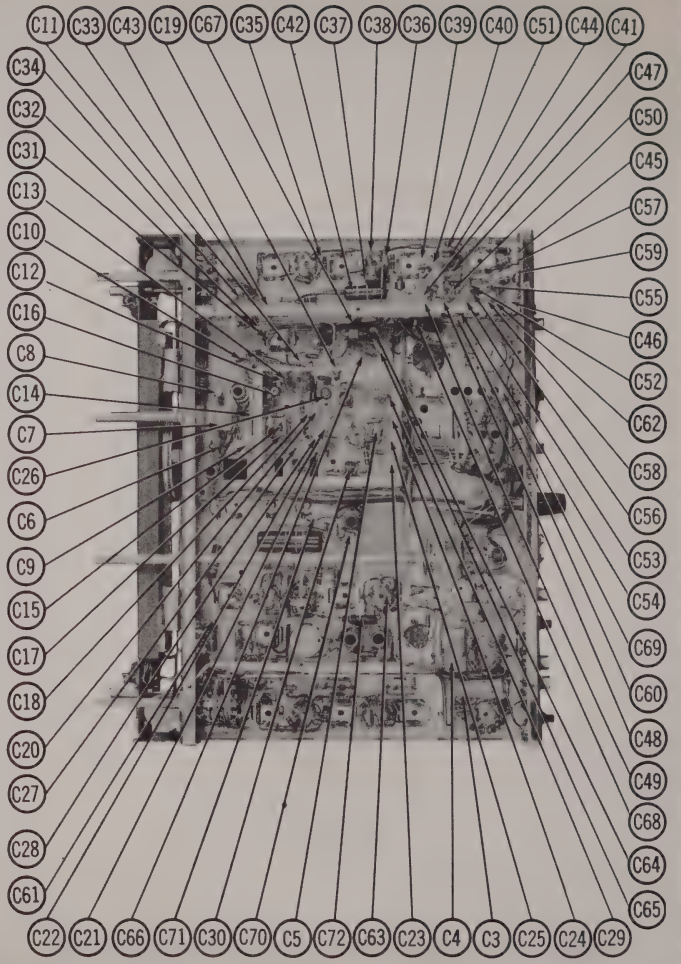
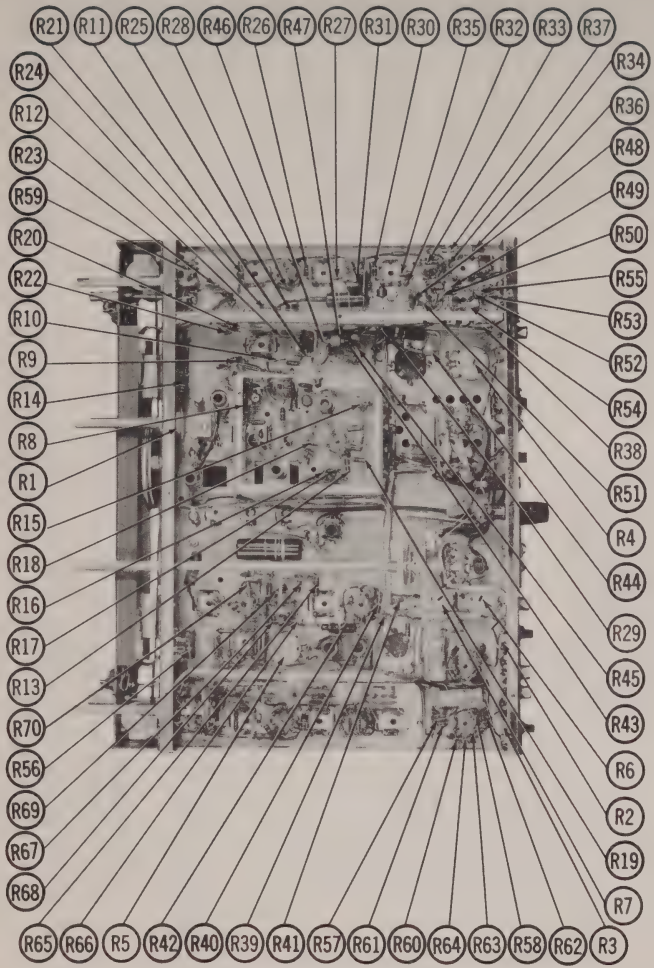


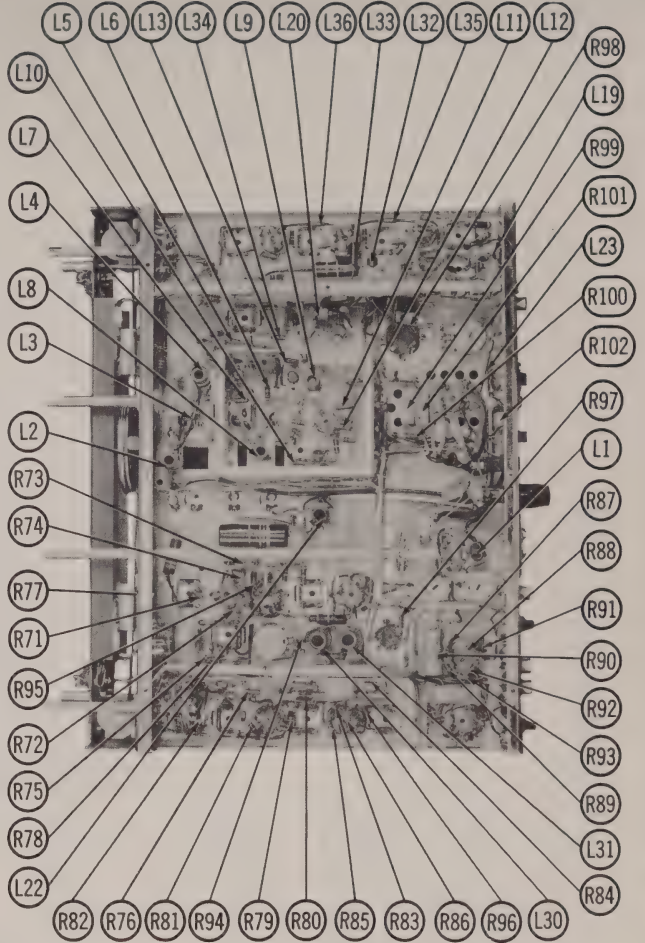
CHASSIS BOTTOM VIEW-
ALIGN., CAPACITOR & MISC. IDENT.



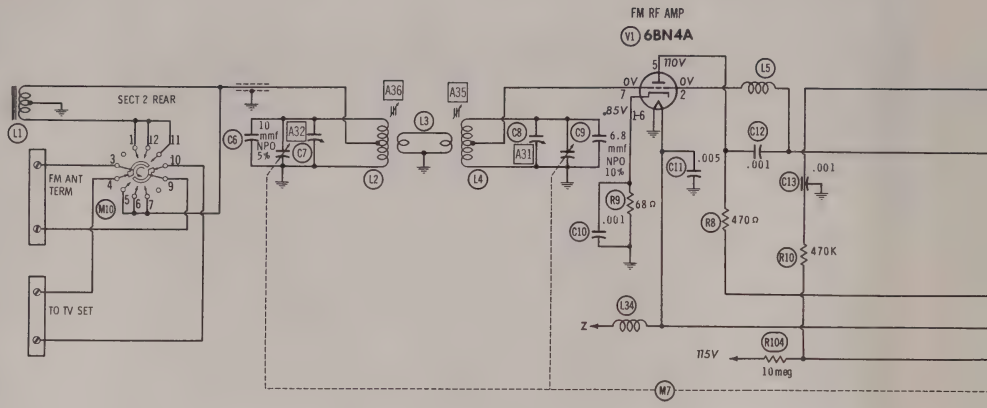
CHASSIS BOTTOM VIEW-CAPACITOR IDENT.

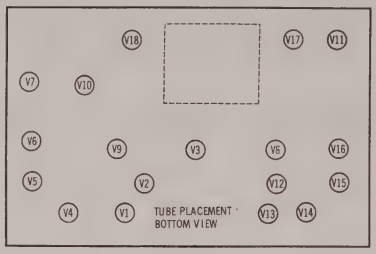


CHASSIS BOTTOM VIEW-RESISTOR IDENT.

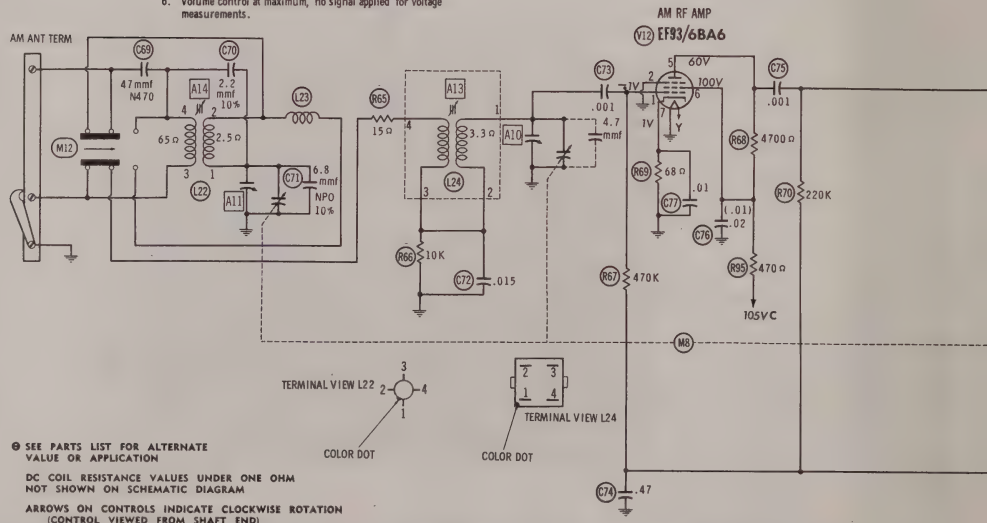


CHASSIS BOTTOM VIEW-
RESISTOR & INDUCTOR IDENT.





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

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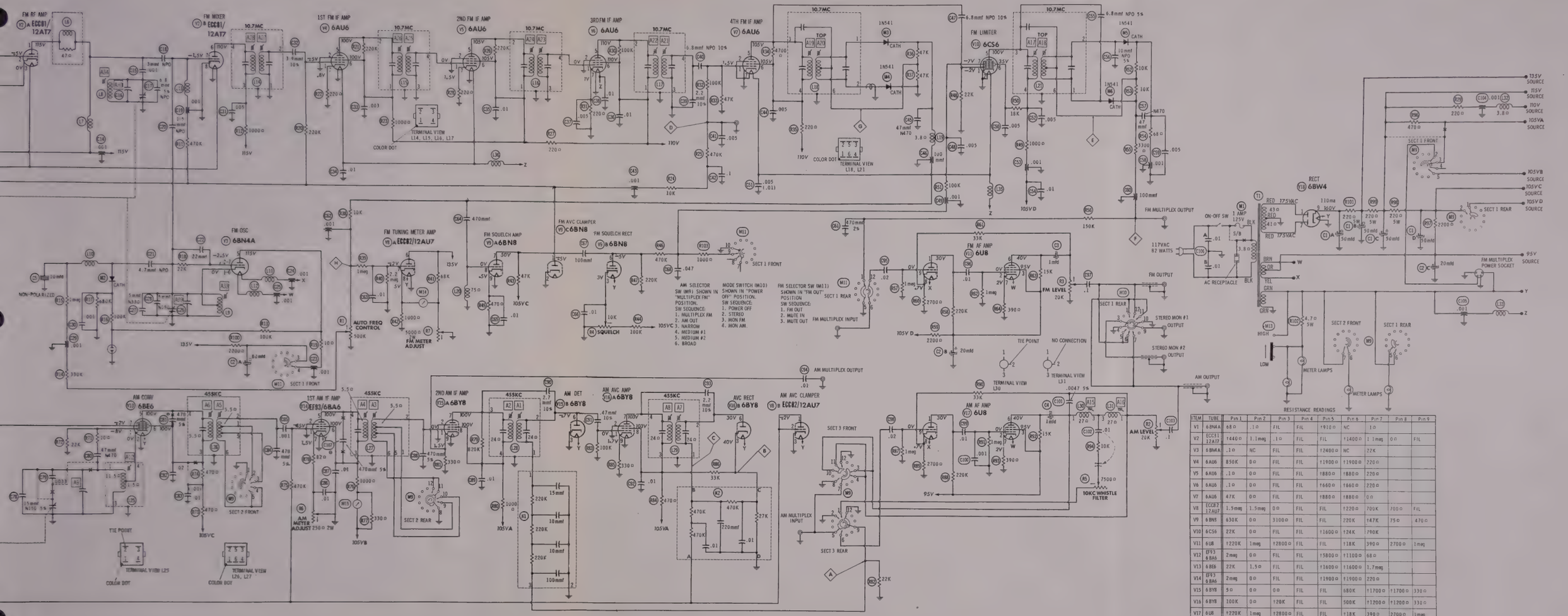
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FM MIXER V2B ECC81/12AT7
1ST FM IF AMP V4 6AU6
2ND FM IF AMP V5 6AU6
3RD FM IF AMP V6 6AU6
4TH FM IF AMP V7 6AU6
FM LIMITER V10 6CS6
FM OSC V3 6BN4A
FM TUNING METER AMP V9A ECC82/12AU7
FM SQUELCH AMP V9B 6BN8
FM AVC CLAMPER V9A 6BN8
FM SQUELCH RECT V9B 6BN8
FM AF AMP V11 6U8
RECT V18 6BW4
AM CONV V12 6BE6
1ST AM IF AMP V14 EF93/6BA6
2ND AM IF AMP V15A 6BY8
AM DET V15B 6BY8
AM AVC AMP V16A 6BY8
AVC RECT V16B 6BY8
AM AVC CLAMPER V8 ECC82/12AU7
AM AF AMP V17 6U8
10.7MC
455KC
1N541
FM MULTIPLEX OUTPUT
FM MULTIPLEX INPUT
FM OUTPUT
AM MULTIPLEX OUTPUT
AM MULTIPLEX INPUT
AM OUTPUT
AUTO FREQ CONTROL
FM METER ADJUST
AM METER ADJUST
SQUELCH
FM LEVEL 20K
AM LEVEL 20K
10KC WHISTLE FILTER
STEREO MON #1 OUTPUT
STEREO MON #2 OUTPUT
117VAC 82 WATTS
ON-OFF SW
AC RECEPTACLE
FM MULTIPLEX POWER SOCKET
METER LAMPS
135V SOURCE
115V SOURCE
110V SOURCE
105VA SOURCE
105VB SOURCE
105VC SOURCE
105V D SOURCE
95V SOURCE
SECT 1 FRONT
SECT 1 REAR
SECT 2 FRONT
SECT 2 REAR
SECT 3 FRONT
SECT 3 REAR
TIE POINT
NO CONNECTION
TERMINAL VIEW L14, L15, L16, L17
TERMINAL VIEW L18, L21
TERMINAL VIEW L25
TERMINAL VIEW L26, L27
TERMINAL VIEW L30
TERMINAL VIEW L31
COLOR DOT
AM SELECTOR SW (M9) SHOWN IN "MULTIPLEX FM" POSITION. SW SEQUENCE: 1. MULTIPLEX FM 2. AM OUT 3. NARROW 4. MEDIUM #1 5. MEDIUM #2 6. BROAD
MODE SWITCH (M10) SHOWN IN "POWER OFF" POSITION. SW SEQUENCE: 1. POWER OFF 2. STEREO 3. MON FM 4. MON AM
FM SELECTOR SW (M11) SHOWN IN "FM OUT" POSITION. SW SEQUENCE: 1. FM OUT 2. MUTE IN 3. MUTE OUT
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BN4A	68Ω	.1Ω	FIL	FIL	†910Ω	NC	1Ω		
V2	ECC81 12AT7	†440Ω	1.1meg	.1Ω	FIL	FIL	†1400Ω	1.1meg	0Ω	FIL
V3	6BN4A	.1Ω	NC	FIL	FIL	†2400Ω	NC	22K		
V4	6AU6	850K	0Ω	FIL	FIL	†1900Ω	†1900Ω	220Ω		
V5	6AU6	.1Ω	0Ω	FIL	FIL	†880Ω	†880Ω	220Ω		
V6	6AU6	.1Ω	0Ω	FIL	FIL	†660Ω	†660Ω	220Ω		
V7	6AU6	47K	0Ω	FIL	FIL	†880Ω	†880Ω	0Ω		
V8	ECC82 12AU7	1.5meg	1.5meg	0Ω	FIL	FIL	†220Ω	700K	700Ω	FIL
V9	6BN8	630K	0Ω	3100Ω	FIL	FIL	220K	†47K	75Ω	470Ω
V10	6CS6	22K	0Ω	FIL	FIL	†1600Ω	†24K	790K		
V11	6U8	†220K	1meg	†2800Ω	FIL	FIL	†18K	390Ω	2700Ω	1meg
V12	EF93 6BA6	2meg	0Ω	FIL	FIL	†5800Ω	†1100Ω	68Ω		
V13	6BE6	22K	1.5Ω	FIL	FIL	†1600Ω	†1600Ω	1.7meg		
V14	EF93 6BA6	2meg	0Ω	FIL	FIL	†1900Ω	†1900Ω	220Ω		
V15	6BY8	5Ω	0Ω	0Ω	FIL	FIL	680K	†1700Ω	†1700Ω	330Ω
V16	6BY8	100K	0Ω	†20K	FIL	FIL	500K	†1200Ω	†1200Ω	330Ω
V17	6U8	†220K	1meg	†2800Ω	FIL	FIL	†18K	390Ω	2700Ω	1meg
V18	6BW4	43Ω	NC	NC	FIL	FIL	TP	41Ω	TP	¶ 25K

ALL MEASUREMENTS TAKEN IN "STEREO MODE" POSITION WITH AM SWITCH IN "BROAD" POSITION AND FM SWITCH IN "MUTE-IN" POSITION.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 9 OF V18. NC NO CONNECTION TP TIE POINT

McINTOSH MODEL MR-66

AM ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

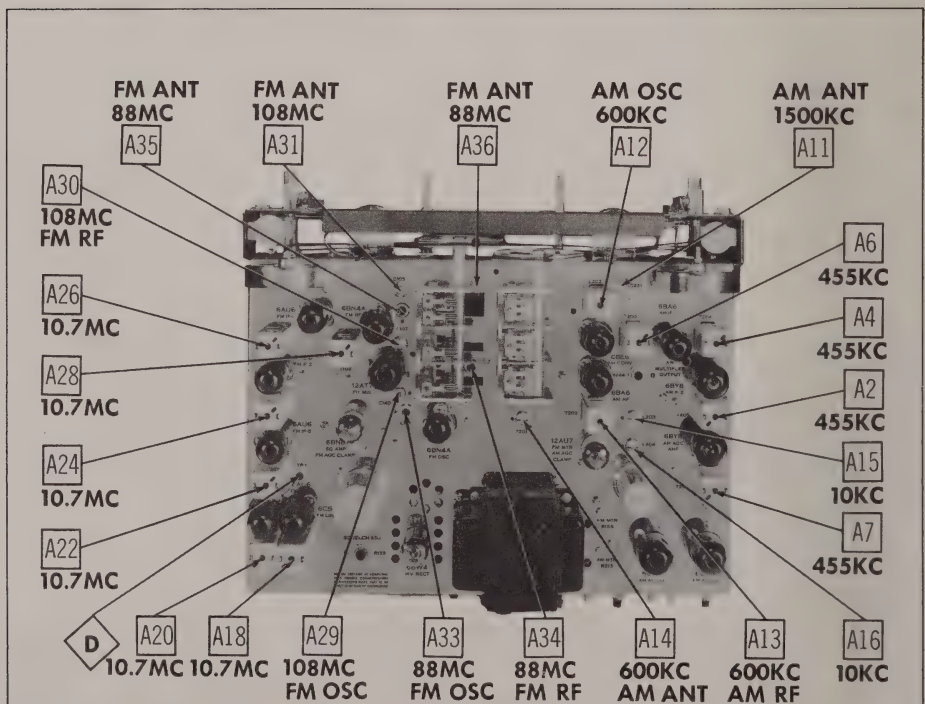
Use only enough generator output to provide a usable indication.
Suggested Alignment Tools:

A1 thru A8 and A21 thru A28, A33.	GENERAL CEMENT #5097, 8727 WALSCO #2515
A9, A10, A11, A30, A31, A32.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A12, A13, A17 thru A20, A34, A35, A36.	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
A14, A15, A16.....	GENERAL CEMENT # 5003, 8271, 8275, 8276, 8609, 8721, 8722, 9150, 9298 WALSCO #2516, 2518, 2519
A29.....	GENERAL CEMENT #8721, 8722 WALSCO #2519

AM ALIGNMENT—MODE SELECTOR IN MON. AM POSITION

Set Antenna switch to "ANT." position.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (Unmod.)	AM(Narrow) Point of non-interferrence.	DC probe to point (A). Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	"	"	"	DC probe to point (B). Common to chassis.	A7, A8	Connect clip lead from point C to chassis. Connect 1000Ω resistor across winding not being adjusted. Adjust for maximum deflection.
3.	Across AM antenna terminals with 50mmf in high side.	1500KC	1500KC	DC probe to point (A). Common to chassis.	A9, A10, A11	Adjust for maximum deflection.
4.	"	600KC	600KC	"	A12, A13, A14	Adjust for maximum deflection. Repeat Steps 3 and 4.
5.	High side thru .01mfd to pin 2 (grid) of AM AF Amp. Low side to chassis.	10KC		Output Meter across AM Output jack.	A15, A16, R5	Adjust for MINIMUM output.



CHASSIS TOP VIEW—ALIGN. IDENTIFICATION

FM ALIGNMENT INSTRUCTIONS

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — MODE SELECTOR IN MON. FM POSITION

AFC fully counterclockwise.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	High side thru .01mfd to point (D). Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 100K to point (E). Common to chassis.	A17	Adjust for maximum deflection.
7.	"	"	"	DC probe to point (E). Common to chassis.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
8.	"	"	"	DC probe thru 100K to point (G). Common to chassis.	A19	Adjust for maximum deflection.
9.	"	"	"	Not Used.	R7	Short point (H) to chassis. Adjust to center FM Tuning meter.
10.	"	"	"	"	A20	Remove short. Adjust to center FM tuning meter.
11.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	"	"	DC probe to point (D). Common to chassis.	A21, A22, A23, A24, A25, A26, A27, A28	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — MODE SELECTOR IN MON. FM POSITION

AFC fully counterclockwise.
Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	High side thru .01mfd to point (D). Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. thru 100K to point (E). Low side to chassis.	A17	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
7.	"	"	"	Vert. Amp. to point (F). Low side to chassis.	A18	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A17 for maximum amplitude and straightness of cross-over lines.
8.	"	"	"	Vert. Amp. thru 100K to point (G). Common to chassis.	A19	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
9.	"	"	"	Not Used.	R7	Short point (H) to chassis. Adjust to center FM Tuning meter.
10.	"	"	"	"	A20	Remove short. Adjust to center FM tuning meter.
11.	High side thru .01mfd to pin 7 (plate) of FM Mixer. Low side to chassis.	"	"	Vert. Amp. thru 100K to point (D). Low side to chassis.	A21, A22, A23, A24, A25, A26, A27, A28	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.

FM RF ALIGNMENT — MODE SELECTOR IN MON. FM POSITION

AFC fully counterclockwise.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
12.	Across FM antenna terminals with 120Ω in each lead.	108MC (Unmod.)	(FM) 108MC	DC probe to point (D). Common to chassis.	A29, A30, A31, A32	Adjust for maximum deflection.
13.	"	88MC	88MC	"	A33, A34, A35, A36	Adjust for maximum deflection. Repeat steps 12 and 13.

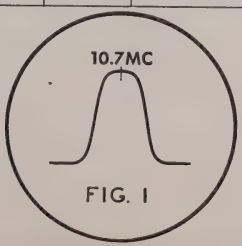


FIG. 1

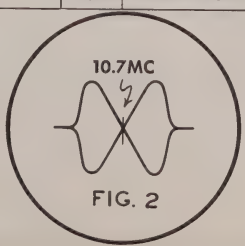


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amplifier	6BN4A
V2	FM RF Amp. -FM Mixer	ECC81/12AT7
V3	FM Osc.	6BN4A
V4	1st FM IF Amp.	6AU6
V5	2nd FM IF Amp.	6AU6
V6	3rd FM IF Amp.	6AU6
V7	4th FM IF Amp.	6AU6
V8	FM Tuning Meter Amp. - AM AVC Clamper	ECC82/12AU7
V9	FM Squelch Amp. -FM Squelch Rect. -FM AVC Clamper	6BN8
V10	FM Limiter	6CS6
V11	FM AF Amp.	6U8
V12	AM RF Amp.	EF93/6BA6
V13	AM Converter	6BE6
V14	1st AM IF Amp.	EF93/6BA6
V15	2nd AM IF Amp. -AM Det.	6BY8
V16	AM AVC Amp. -AVC Rect.	6BY8
V17	AM AF Amp.	6U8
V18	Rectifier	6BW4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	McIntosh PART No.	REPLACEMENT DATA: AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	■50	200		AFH4-01-60			WP412.8	TMQ-4104	
B	■50	200							
C	▲50	200							
D	50	200							
C2A	■80	200		AFH2-08	XB0091		FP318.7	TMD-2075	TVL-2515
B	▲20	150		PRSI590	BR8035		TC59	TD-80-350	TVA-1716
C	20	150							
C3	1	200		PRSI700	BR145	QT1-1	TT250XI	TD-2-450	TVA-1700
C4	1	200		PRSI700	BR145	QT1-1	TT250XI	TD-2-450	TVA-1700
C5	10	25NP		PRS7315	BBR10-150	NPQT-3	TCN5010		TVANS-1204,1*

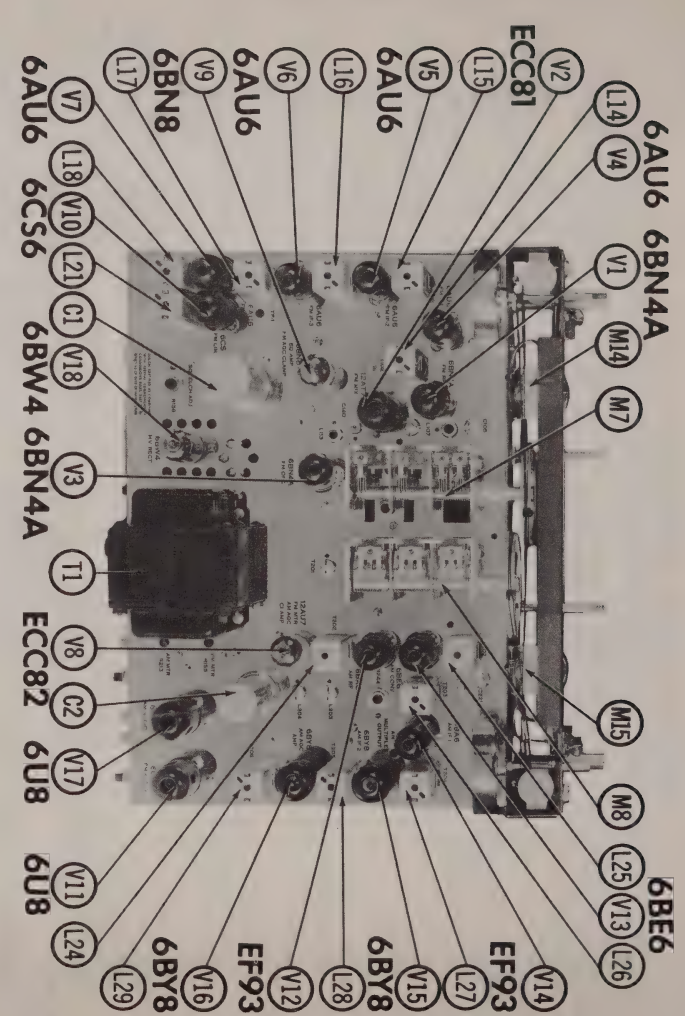
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	10 NPO 5%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C7								
C8								
C9	6.8 NPO 10%		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-468	10TCC-V68
C10	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C11	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C12	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C13	.001		EF-001	MFT-1000		CCF-102	CT280A	
C14	.001		EF-001	MFT-1000		CCD-102	CT280A	
C15	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C16								
C17	6.8 NPO 5%		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C18	3 NPO		NPO-SI 3.0	TCZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-V33
C19	.001		EF-001	MFT-1000		CCF-102	CT280A	
C20	1.5 NPO		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V15
C21	4.7 NPO		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C22	22 N470					*		
C23	.001		EF-001	MFT-1000		CCF-102	CT280A	
C24	.001		EF-001	MFT-1000		CCF-102	CT280A	
C25	.001		EF-001	MFT-1000		CCF-102	CT280A	
C26								
C27	5 N330					*		
C28	5 N150					*		10TCP-V50
C29	.001		EF-001	MFT-1000		CCF-102	CT280A	
C30	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C31	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C32	3.9 10%				C10V4C			10TCC-V39
C33	.003		DI-3000	DD-302	BYA10D3	CCD-302	GP230	10TS-D30
C34	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C36	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C37	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C38	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C39	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C40	6.8 NPO 10%		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C41	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C42	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C43	.001		EF-001	MFT-1000		CCF-102	CT280A	
C44	.005		BPD-005	DD-502	BYA10D5	CCD-502 *	B-250	5HK-D50
C45	47 N470							
C46	100		EF-0001	MFT-100				
C47	6.8 NPO 10%		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C48	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C49	.001		EF-001	MFT-1000		CCF-102	CT280A	
C50	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C51	.005	(.01) †	BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C52	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C53	.001		EF-001	MFT-1000		CCF-102	CT280A	
C54	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C55	6.8 NPO 5%		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C56	10 NPO 5%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100 *	CNO-410	10TCC-Q10
C57	47 N470							
C58	.001		EF-001	MFT-1000		CCF-102	CT280A	
C59	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C60	100		EF-0001	MFT-100				
C61	470 2%					VCM-20-471G	MCE244	
C62	.001		EF-001	MFT-1000		CCF-102	CT280A	
C63	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C64	470		DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C65	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C66	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C67	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C68	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473 *	GEM-4147	2TM-S47
C69	47 N470							
C70	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C71	6.8 NPO 10%		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C72	.015 200V		P288N-015	DD-153	CUB4Si5	4DP-1-153	GEM-415	4TM-Si5
C73	.001		BPD-001	DD-102	BYA10Di	CCD-102	B-210	5HK-Di0
C74	.47 200V		P288N-47		CUB4P47	2DP-5-474	GEM-2047	2TM-P47
C75	.001		BPD-001	DD-102	BYA10Di	CCD-102	B-210	5HK-Di0
C76	.02	(.01) †	BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C77	.01		BPD-01	DD-103	BYA10Si	CCD-103 *	B-110	5HK-S10
C78	15 N150 5%							10TCP-Q15
C79	.0033 200V		P288N-0033	D6-332	CUB6D33	6DP-1-332 *	GEM-6233	6TM-D33
C80	47 N470							
C81	470 5%	Note 1	1469-00047		5R5T47	CM-19B-471J	MCJ244	MS-347
C82	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C83	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C84	470 5%		1469-00047		5R5T47	CM-19B-471J	MCJ244	MS-347
C85	.001		BPD-001	DD-102	BYA10Di	CCD-102	B-210	5HK-Di0
C86	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C87	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C88	470 5%		1469-00047		5R5T47	CM-19B-471J	MCJ244	MS-347
C89	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C90	2.7 10%				C10V3C			10TCC-V27
C91	.47mmf 10%							
C92	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C93	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C94	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C95	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C96	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C97	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C98	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C99	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C100	.001		BPD-001	DD-102	BYA10Di	CCD-102	B-210	5HK-Di0
C101	.0047 5%		1464-0047		1R5D47	CM-20B-472J	MCJ464	MS-247
C102	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C103	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C104	.001		EF-001	MFT-1000		CCF-102	CT280A	
C105	.001		EF-001	MFT-1000		CCF-102	CT280A	
C106A	.01		BPD-2X01	DD3-103	BYD60Si	CCD-103	UAC-2X110	5HK-2Si0
B	.01					CCD-102		

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C107	470 5%	Note 1	1469-00047		5R5T47	CM-19B-471J	MCJ244	MS-347

† Alternate Value.
Note 1. Not used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	McINTOSH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	R50001-3	B-59	A47-500K-S	QII-133	U50	Auto Freq. Control
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	20K	½	R50000-5	AB-25	A47-25K-W	B13-120	U24	AM Level
B	Shaft			AK-1	FKS-1/4	SK6	Not Req.	
R3A	20K	½	R50000-5	AB-25	A47-25K-W	B13-120	U24	FM Level
B	Shaft			AK-1	FKS-1/4	SK6	Not Req.	
R4A	10K	½	R50000-7	AB-14	A47-10K-S	B11-116	SU-20	Squelch
B	Shaft			AK-1	FKS-1/4	SK6	Not Req.	
R5A	7500Ω	½	R50000-6	AB-13	A47-7500-S	B11-115	SU-20	10KC Whistle Filter
B	Shaft			AK-1	FKS-1/4	SK6	Not Req.	
R6	250Ω	2(WW)			39-300	112-300	FL-250	AM Meter Adjust
R7	5000Ω	2(WW)			39-5000	112-5000	FL-5K	FM Meter Adjust

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R8	470Ω				R43	47K			
R9	68Ω				R44	100K			
R10	470K				R45	470Ω			
R11	470K				R46	470K			
R12	1000Ω				R47	220K			
R13	100K				R48	22K			
R14	330K				R49	1000Ω			
R15	1meg				R50	18K			
R16	100K				R51	100K			
R17	680K				R52	10K			
R18	22K				R53	10K			
R19	10Ω				R54	68Ω			
R20	220K				R55	3300Ω			
R21	220K				R56	150K			
R22	220Ω				R57	1meg			
R23	1000Ω				R58	220K			
R24	10K				R59	2200Ω			
R25	470K				R60	2700Ω			
R26	220K				R61	33K			
R27	220Ω				R62	1meg			
R28	220Ω				R63	15K			
R29	220Ω				R64	390Ω			
R30	100K				R65	15Ω			
R31	220Ω				R66	10K			
R32	100K				R67	470K			
R33	47K				R68	4700Ω			
R34	4700Ω				R69	68Ω			
R35	220Ω				R70	220K			
R36	47K				R71	10Ω			
R37	47K				R72	22K			
R38	10K				R73	470Ω			
R39	1meg				R74	470Ω			
R40	2.2meg				R75	470K			
R41	68K				R76	1000Ω			
R42	1000Ω				R77	330Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R78	82Ω			
R79	820K			
R80	1000Ω			
R81	330Ω			
R82	22K			
R83	100K			
R84	470Ω			
R85	330Ω			
R86	33K			
R87	1meg			
R88	220K			
R89	2700Ω			
R90	33K			
R91	1meg			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R92	15K			
R93	390Ω			
R94	10K			
R95	470Ω			
R96	470Ω			
R97	2200Ω			
R98	220Ω			
R99	220Ω 5W	PW5-220	5W-SQ-220	
R100	2200Ω			
R101	220Ω 5W	PW5-220	5W-SQ-220	
R102	4.7Ω 5W	PW5-4.7	5W-SQ-4.7	
R103	1000Ω			
R104	10meg			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	McINTOSH PART No.	REPLACEMENT DATA
K1	AM Det. RF Filter	(2) 10mmf, 15mmf, 100mmf, (3) 220K	PC107-165	
K2	AM AVC Filter	220mmf, (2) .01mfd, 27K, (3) 470K	PC107-164	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: McINTOSH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	Ant. Matching						① Wound on 47Ω
L2	FM Ant.						
L3	Coupling						
L4	FM Ant.						
L5	RF Choke (2.2uh)		BC-563	4606	RTC-8517	T857	
L6	RF Choke	①					
L7	RF Choke (1.2uh)		BC-561	4602	RTC-8515	T855	
L8	FM RF						
L9	FM Osc.						
L10	RF Choke (1.2uh)		BC-561	4602	RTC-8515	T855	
L11	Fil. Choke (2.2uh)		BC-563	4606	RTC-8517	T857	
L12	Fil. Choke (2.2uh)		BC-563	4606	RTC-8517	T857	
L13	RF Choke (1.2uh)		BC-561	4602	RTC-8515	T855	
L14	1st FM IF		FM-254	1463	RTC-8599	T633	
L15	2nd FM IF		FM-254	1463	RTC-8599	T633	
L16	3rd FM IF		FM-254	1463	RTC-8599	T633	
L17	4th FM IF		FM-254	1463	RTC-8599	T633	
L18	Discriminator		FM-253	1464	RTC-8665	T634	
L19	RF Choke (75uh)		TV-186	6172	RTC-8590	T303	
L20	RF Choke (2.5MH)		BC-549	4666	RTC-9175	T843	
L21	AFC Discriminator		FM-253	1464	RTC-8665	T634	
L22	AM Ant.		BC-380	70-A	RTC-8731	T500	
L23	RF Choke (4.7uh)		SW-631	4609	RTC-8519	T819	
L24	AM Ant.						
L25	AM Osc.		BC-392	A-121-C	RTC-8760	T508	
L26	1st AM IF						
L27	2nd AM IF						
L28	3rd AM IF		BC-353	12-C2	RTC-8633	T608	
L29	4th AM IF (AVC)		BC-353	12-C2	RTC-8633	T608	
L30	10KC Filter						
L31	10KC Filter						
L32	RF Choke (75uh)		TV-186	6172	RTC-8590	T303	
L33	Fil. Choke (1.2uh)		BC-561	4602	RTC-8515	T855	
L34	Fil. Choke (1.2uh)		BC-561	4602	RTC-8515	T855	
L35	Fil. Choke (1.2uh)		BC-561	4602	RTC-8515	T855	
L36	Fil. Choke (1.2uh)		BC-561	4602	RTC-8515	T855	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: McINTOSH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V @ .76A	350VCT @ .110A DC	6.3V @ 6A						
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT @ 1.1A								

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: McINTOSH PART No. FUSE	McINTOSH PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	1A 125V S/B			313001 (3AG 1A 125V S/B)	342001	MDL 1	HKP

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: McINTOSH PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M2					AFC
M3	1N541			1N541	Discriminator
M4	1N541			1N541	(AFC-Squelch-Tuning Ind.)
M5	1N541			1N541	Discriminator
M6	1N541			1N541	(Audio)

MISCELLANEOUS

ITEM No.	PART NAME	McINTOSH PART No.	NOTES
M7	Tuning Cap.		FM, 3 Gang
M8	Tuning Cap.		AM, 3 Gang (1st Ant. 10–508mmf, 2nd Ant. 7–495mmf, Osc. 4–156mmf)
M9	Switch		AM Selector (Rotary Wafer Type)
M10	Switch		Mode (Rotary Wafer Type)
M11	Switch		Selector (Mute Out, Mute In, & FM Out)
M12	Switch		AM Antenna (DPDT Slide Type)
M13	Switch		Lamps (Hi-Lo) (DPST Slide Type)
M14	Meter		FM, Tuning Indicator
M15	Meter		AM, Tuning Indicator

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

MOTOROLA MODELS A11A, W, A12N (Ch. HS-824, HS-825)

MOTOROLA MODELS A11A, W, A12N (Ch. HS-824, HS-825)

MODEL A12N

MOTOROLA MODELS A11A, W, A12N (Ch. HS-824, HS-825)

TRADE NAME	Motorola Models A11A, A11W (Ch. HS-824); A12N (Ch. HS-825)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC-DC Operated 7 Tube AM Receiver (Ch. HS-824 has 6 Tube)
POWER SUPPLY	110-120 Volts AC-DC RATING 28 Watts, .32 Amp. @ 117 VAC
TUNING RANGE	BROADCAST 535-1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
A6 and A7 are not used in Chassis HS-824.
Suggested Alignment Tools: A1 thru A4, A7 .... GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6, A8 ..... GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to common.	455KC (400∿ Mod.)	Tuning gang fully open	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1620KC	"	"	A5	"
3.	High side thru .1mfd to pin 1 (grid) of RF Amp. Low side to common.	1400KC	1400KC Signal	"	A6	"
4.	"	600KC	600KC Signal	"	A7	Adjust for maximum output. Repeat steps 2, 3 and 4.
5.	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output	1400KC	1400KC Signal	"	A8	Adjust for maximum output with chassis in cabinet.
6.	"	600KC	600KC Signal	"	A9	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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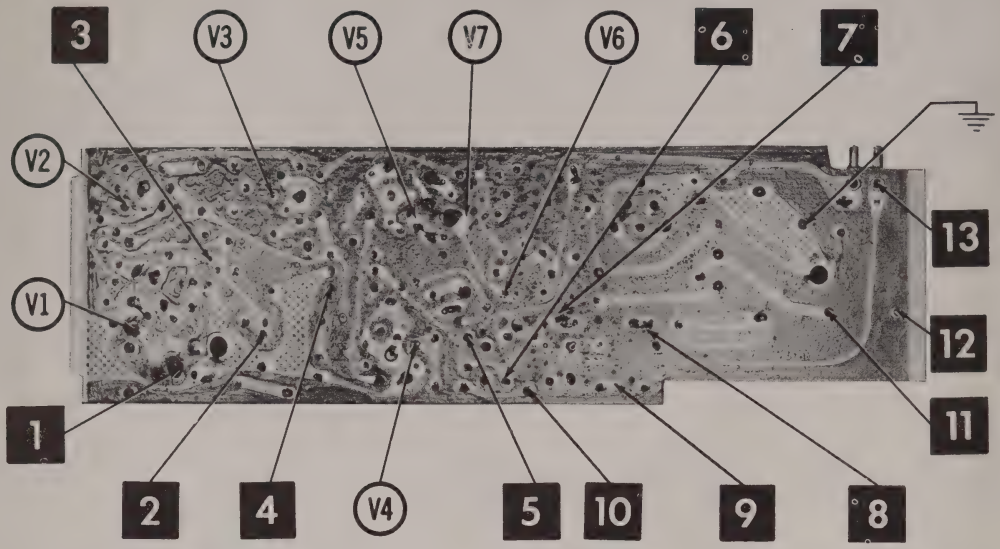
KG914

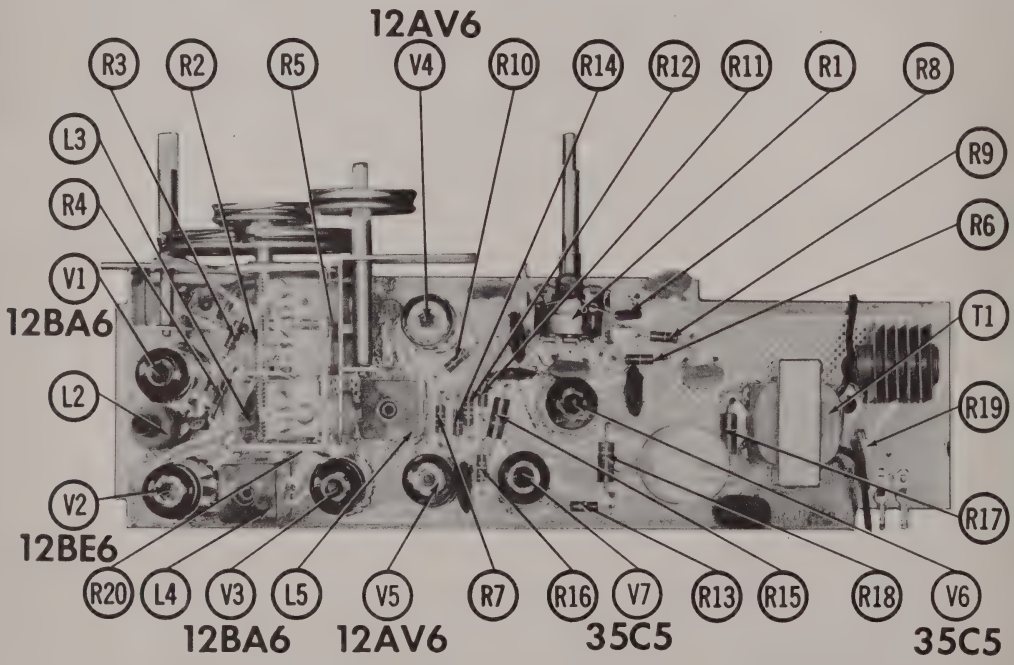
SET 558 FOLDER 12



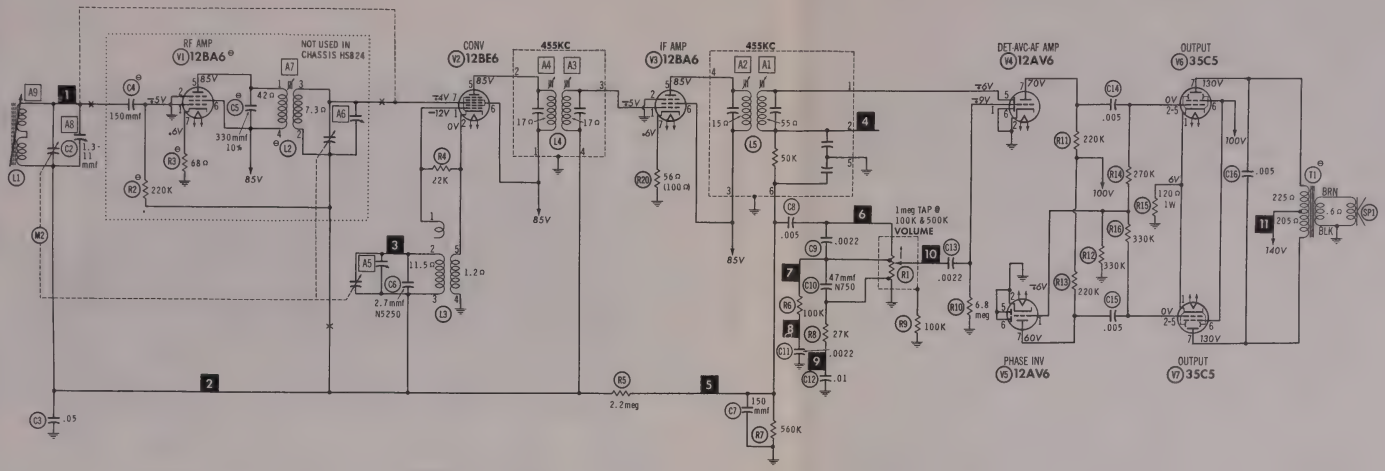
A Howard W. Sams CIRCUITRACE Photo

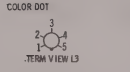
PRINTED BOARD

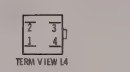
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



CHASSIS TOP VIEW-TUBE, RESISTOR & INDUCTOR IDENT.



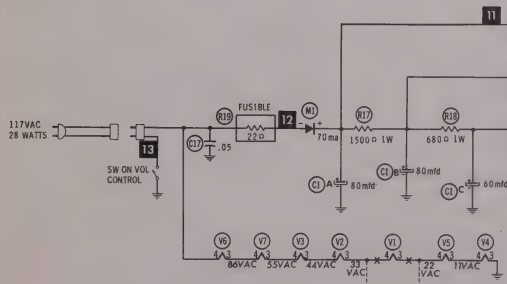




RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BA6	3meg	0Ω	30Ω	45Ω	†2200Ω	†2200Ω	68Ω
V2	12BE6	22K	1.2Ω	45Ω	60Ω	†2200Ω	†2200Ω	2.8meg
V3	12BA6	2.8meg	0Ω	60Ω	75Ω	†2200Ω	†2200Ω	56Ω
V4	12AV6	6.8meg	0Ω	0Ω	15Ω	610K	0Ω	†220K
V5	12AV6	330K	0Ω	15Ω	30Ω	0Ω	0Ω	†220K
V6	35C5	120Ω	600K	115Ω	160Ω	NC	†1500Ω	†225Ω
V7	35C5	120Ω	660K	75Ω	115Ω	NC	†1500Ω	†205Ω

† MEASURED FROM OUTPUT OF M1. NC NO CONNECTION



SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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MOTOROLA MODELS A11A, W, A12N (Ch. HS-824, HS-825)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆ USE	TYPE
V1	RF Amplifier	12BA6 *
V2	Converter	12BE6
V3	IF Amplifier	12BA6
V4	Det. - AVC - AF Amp.	12AV6
V5	Phase Inverter	12AV6
V6	Output	35C5
V7	Output	35C5

* Not used on Chassis HS-824.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	80	150	23B60423A01	PWH3-13-70			FP214.6 † TC68		
B	80	150							
C	60	150							

† Use Printed Circuit Adapter Kit FPA.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	1.3-11	#20B60120A01				420		
C3	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C4	150	Note 1	DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C5	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C6	2.7 N5250	#21A541621				*		
C7	150		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C8	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C9	.0022		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C10	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C11	.0022		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C12	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	.0022		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C14	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C15	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C16	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C17	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C18	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

Note 1. Not used in Chassis HS-824. # Motorola Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A B	1meg * Switch		18B60381A01					Volume Power Off-On

* Taps @ 100K and 500K.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	220K			Note 1
R3	68Ω			Note 1
R4	22K			
R5	2.2meg			
R6	100K			
R7	560K			
R8	27K			
R9	100K			
R10	6.8meg			
R11	220K			

Note 1. Not used in Chassis HS-824

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R12	330K			
R13	220K			
R14	270K			
R15	120Ω 1W			
R16	330K			
R17	1500Ω 1W			
R18	680Ω 1W			
R19	22Ω			#65K647003 (100Ω) *
R20	56Ω			

* Used in Chassis HS-824

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA MOTOROLA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	Loopstick	24B60503A01	BC-418	705-A		T532	
L2	RF	24B60491A01 ①					① Chassis HS-825 only.
L3	Osc.	24B643864					
L4	Input IF	24C643901	BC-356	13-PC1	RTC-8641	T614	
L5	Output IF	24K647221					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	4700Ω CT	6-8Ω	25C60442A01-B①					① Alternate #25C60442A01

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	6"	PM	6-8Ω	50D60475A02	6A21Z8	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA			NOTES	
	CURRENT (Measured)	MOTOROLA PART No.	RCA PART No.	SARKES TARZIAN PART No.		
M1	.070A	48K646954 ‡	1N1763 †	150 ‡	† Silicon	‡ Selenium

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuning Cap. Tuning Cap. Printed Board	19C80327A01 19B80323A01 1V80044A35	3 Gang, Model A12N 2 Gang, Model A11A & A11W Less All Components

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

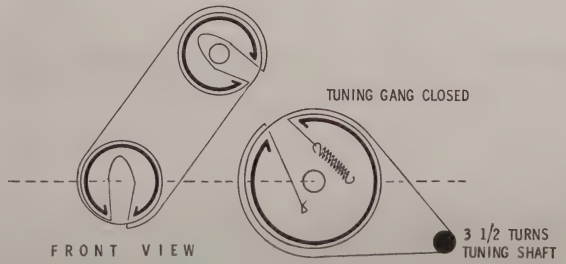
NAME	PART NO.	DESCRIPTION
Dial Scale	34B80408A01	
Dial Crystal	61D80386A01	
Dial Pointer	52B80411A01	Model A12N
Knob	36B80147A05	Tuning, Loudness, Mocha, Model A12N
Knob	36B80147A06	Tuning, Loudness, Grey, Model A11A
Knob	36B80147A03	Tuning, Loudness, White, Model A11W
Cabinet	1V80030A60	Mocha, Includes Dial Scale, Model A12N
Cabinet	1V80030A58	Grey, Includes Dial Scale, Model A11A
Cabinet	1V80030A51	White, Includes Dial Scale, Model A11W

WIRING DATA

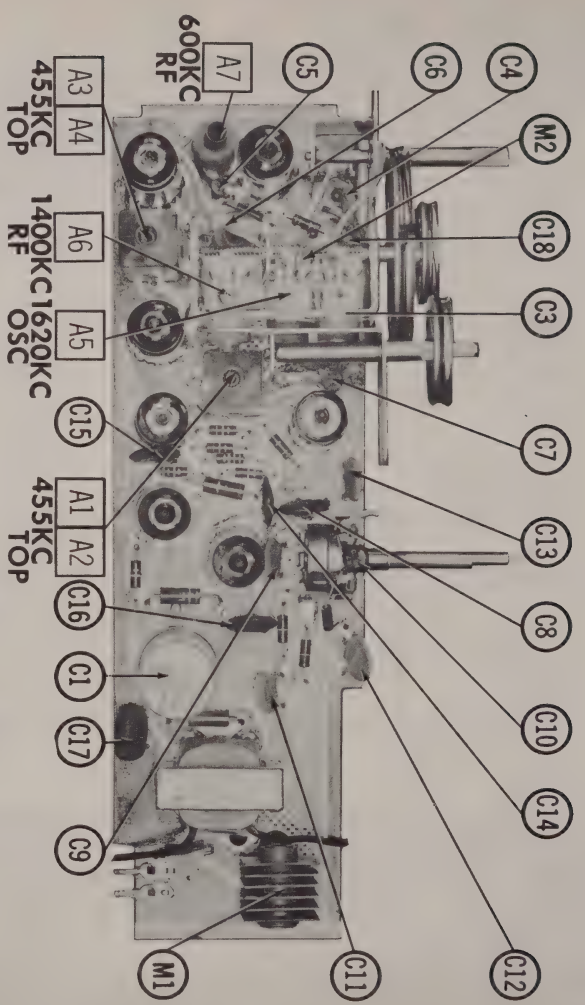
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

DRIVE CORD STRINGING



CHASSIS—TOP VIEW



PHOTOFACT® Folder

MOTOROLA MODELS SK43 SERIES
(Ch. HS-835A, -1, HS835B)

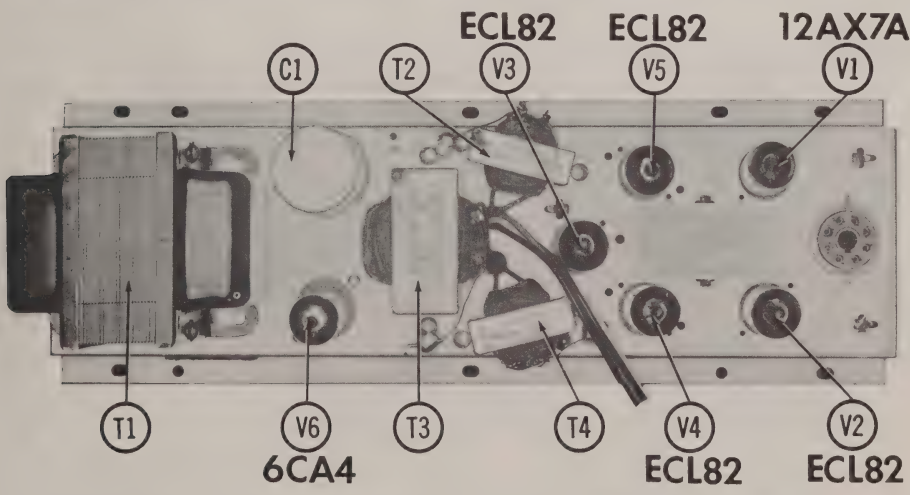
MOTOROLA MODELS SK43 SERIES
(Ch. HS-835A, -1, HS835B)

MODEL SK-43W

MOTOROLA MODELS SK43 SERIES
(Ch. HS-835A, -1, HS835B)

TRADE NAME	Motorola Models SK43B, SK43B-1, SK43M, SK43M-1, SK43W, SK43W-1, (HS-835A, HS-835A-1, HS-835B)
MANUFACTURER	Motorola, Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC Operated 6 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles RATING 80 Watts, .75 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER VM34RC USED IN MODEL SK43 SERIES, OR VM32RC USED IN MODEL SK43-1 SERIES, — SEE SIMILAR V-M 1572 — PHOTOFACT SET 527 FOLDER 14



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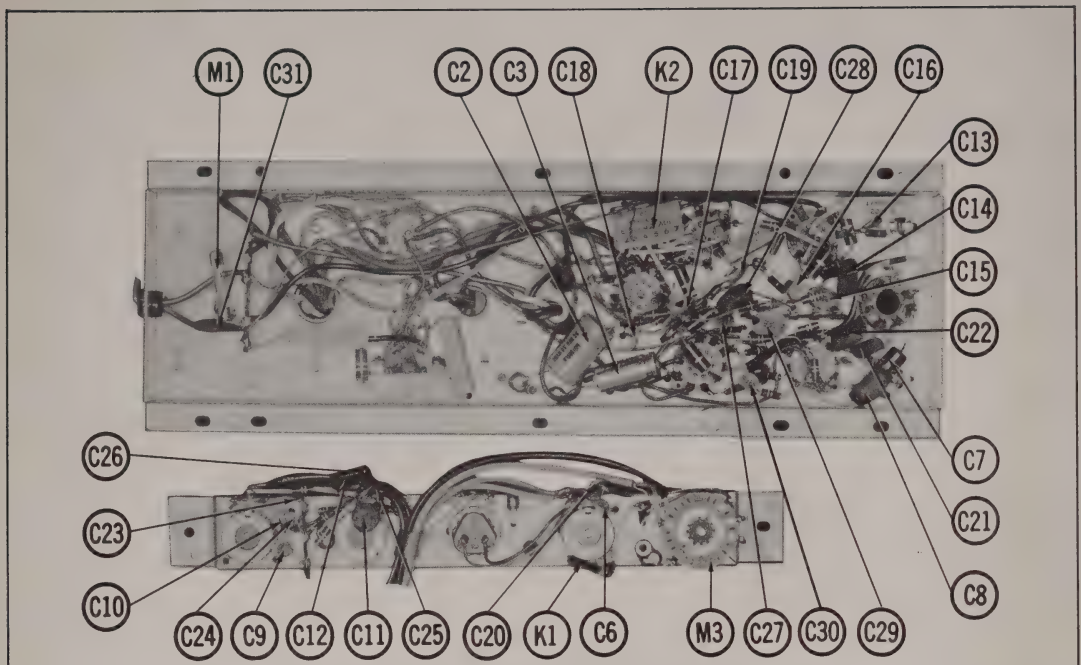
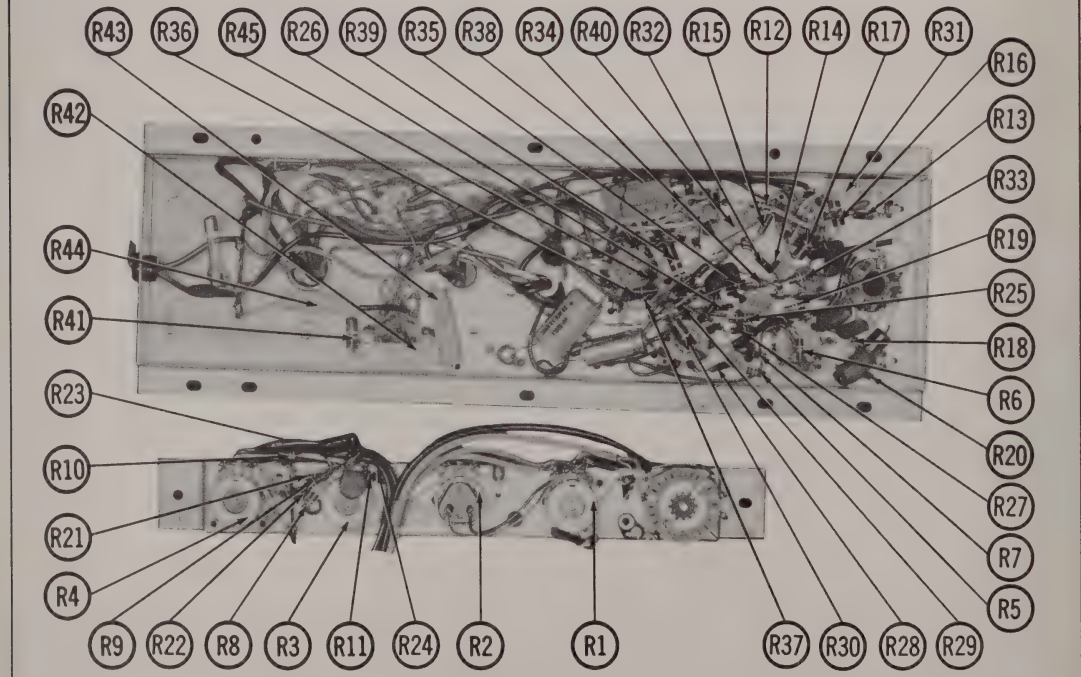
KT898

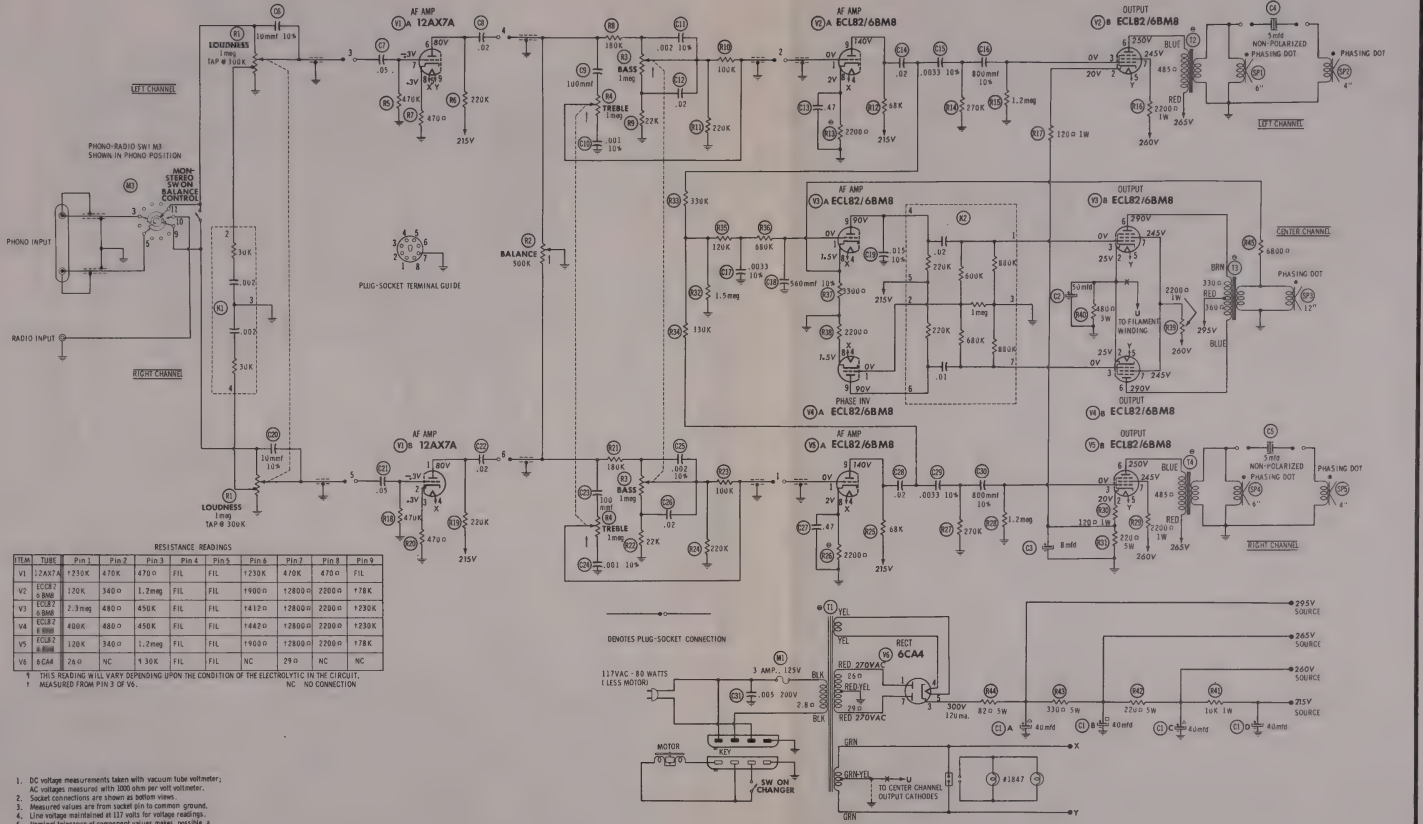
SET 558 FOLDER 13



CHASSIS BOTTOM VIEW-CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW-RESISTOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7A	†230K	470K	470Ω	FIL	FIL	†230K	470K	470Ω	FIL
V2	ECL82 6BM8	120K	340Ω	1.2meg	FIL	FIL	†900Ω	†2800Ω	2200Ω	†78K
V3	ECL82 6BM8	2.3meg	480Ω	450K	FIL	FIL	†412Ω	†2800Ω	2200Ω	†230K
V4	ECL82 6BM8	400K	480Ω	450K	FIL	FIL	†442Ω	†2800Ω	2200Ω	†230K
V5	ECL82 6BM8	120K	340Ω	1.2meg	FIL	FIL	†900Ω	†2800Ω	2200Ω	†78K
V6	6CA4	2Ω	NC	¶ 30K	FIL	FIL	NC	29Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V6. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MOTOROLA MODELS SK43 SERIES (Ch. HS-835A, -1, HS-835B)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Left Channel AF Amp. - Right Channel AF Amp.	12AX7A
V2	Left Channel AF Amp. - Left Channel Output	ECL82/6BM8
V3	Center Channel AF Amp. - Center Channel Output	ECL82/6BM8
V4	Center Channel Phase Inv. - Center Channel Output	ECL82/6BM8
V5	Right Channel AF Amp. - Right Channel Output	ECL82/6BM8
V6	Rectifier	6CA4 (EZ81) *

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	▲40	400	23D60190A01	AFH4-18-45	D0177	XC4-80	WP447.7	TMQ-4322	TVL-4775
B	■40	400							
C	▲40	350							
D	40	350							
C2	50	50	23C60119A06	PRS1350	BR505	QT1-15	TC39	TD-50-50	TE-1307
C3	8	25	23C60119A02	PRS1405	BBR8-150	QT1-4	TC41	TD-8-150	TVA-1405
C4	5	25NP	23B643970	PRS7405	BBR4-150	NPQT-1	TCN505		TVANS-1203-1*
C5	5	25NP	23B643970	PRS7405	BBR4-150	NPQT-1	TCN505		TVANS-1203-1*

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	10 10%		DI-10	DD-100	L10Q10	CCD-100	GP410	10TS-Q10
C7	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C8	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C9	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C10	.001 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C11	.002 10%		DI-2000		5R5D2	CCD-202	GP220	10TS-D20
C12	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S20
C13	.47 3V			UK-474				HY-130
C14	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C15	.0033 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C16	800 10%		DI-820	DD-801	5R5T8	CCD-801	GP382	10TS-T80
C17	.0033 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C18	560 10%		DI-560	DD-561	5R5T56	CCD-561	GP356	10TS-T56

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C19	.0015 10%		DI-1500	DD-152	5R5D15	CCD-152	GP215	10TS-D15
C20	10 10%		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C21	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C22	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C23	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C24	.001 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C25	.002 10%		DI-2000		5R5D2	CCD-202	GP220	10TS-D20
C26	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S20
C27	.47 3V			UK-474				HY-130
C28	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C29	.0033 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C30	800 10%		DI-820	DD-801	5R5T80	CCD-801	GP382	10TS-T80
C31	.005 2000V			DD30-502	HVC20D5	3CCD-502	2HV-247	BL-D50

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	log	18K646986				FA16T35	Loudness, Right Channel
	300K Tap							
B	1meg	log					RU16T35	Loudness, Left Channel
	300K Tap							
C	Shaft						CS3500	
R2A	500K	log	18K646987		C47S-500K-S			Balance
B	Switch				Not Req.			Push-Pull Stereo-Monaural
C	Shaft				FS-3			
R3A	2meg	log	18D60116A01	B-76	AD47-2meg-Z		FA26A	Bass, Right Channel
B	2meg	log		SR-76	Not Req.		RU26A	Bass, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	
R4A	2meg	log	18D60116A01	B-76	AD47-2meg-Z		FA26A	Treble, Right Channel
B	2meg	log		SR-76	Not Req.		RU26A	Treble, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS	ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	470K				R7	470Ω			
R6	220K				R8	180K			

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R9	22K			
R10	100K			
R11	220K			
R12	68K			
R13	2200Ω			Note 1
R14	270K			
R15	1.2meg			
R16	2200Ω 1W			
R17	120Ω 1W			
R18	470K			
R19	220K			
R20	470Ω			
R21	180K			
R22	22K			
R23	100K			
R24	220K			
R25	68K			
R26	2200Ω			Note 1
R27	270K			
R28	1.2meg			
R29	2200Ω 1W			
R30	120Ω 1W			
R31	220Ω 5W	PW5-220	5W-SQ-220Ω	
R32	1.5meg			
R33	330K			
R34	330K			
R35	120K			
R36	680K			
R37	3300Ω			
R38	2200Ω			
R39	2200Ω 1W			
R40	480Ω 3W	PW3-480	3W-SQ-480	
R41	10K 1W			
R42	220Ω 5W	PW5-220	5W-SQ-220	
R43	330Ω 5W	PW5-330	5W-SQ-330	
R44	82Ω 5W	PW5-82	5W-SQ-82	
R45	6800Ω			

Note 1. Chassis HS-835A use 820Ω in this application.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1 K2	Loudness Comp. Audio Coupling	(2) .002mfd, (2) 30K .01mfd, .02mfd, (2) 220K, 600K, (3) 680K, 1meg	51K646985 51B60422A01	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V@ .75A	540VCT @ .120A DC	6.3V@ .9A	25K646988-C ①					① Alt. Part # 25K646988
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT @ 3.6A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5400Ω	6-8Ω	25C645449-H①	A-2903	A-3850	24S05	S-51X	① Alt. Part #25C645449
T3	9000Ω CT	6-8Ω	25C60394A02-B②	A-2901③	A-3870	22S88	S-55X	② Alt. Part #25C60394A02
T4	5400Ω	6-8Ω	25C645449-H①	A-2903	A-3850	24S05	S-51X	③ Drill New Mtg. Hole(s).

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	6"	PM	6-8Ω	50K646994	6A15Z8	
SP2	4"	PM	6-8Ω	50K647115	4A1Z8	
SP3	12"	PM	6-8Ω	50K647114	12A6PA	
SP4	6"	PM	6-8Ω	50K646994	6A15Z8	
SP5	4"	PM	6-8Ω	50K647115	4A1Z8	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA MOTOROLA PART No. FUSE	MOTOROLA PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	3A 125V S/B P/T	65A646112		315003 (3AG 3A 125V) S/B P/T		MDV 3	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	MOTOROLA PART No. CARTRIDGE	MOTOROLA PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	59C645700	47K645702*	17D	Not Req.	26SD	S1-1D* & S1-3 *	8TA4-SD	N-STA-SD	
	59C60337A02	59C60337A04*							Used in # 1 Series

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Switch	40B60152A01	Function Selector (Rotary Wafer Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36D60203A03	Loudness, Bass, Treble
Knob	36D60203A05	Balance
Knob	36D60203A07	Selector
Cabinet	16E60250A02	Blond Oak, Model SK43B, SK43B-1
Cabinet	16E60250A01	Mahogany, Model SK43M, SK43M-1
Cabinet	16E60250A07	Walnut, Model SK43W, SK43W-1
Cabinet Leg	16E60250A06	Blond Oak, Model SK43B, SK43B-1
Cabinet Leg	16E60250A05	Mahogany, Model SK43M, SK43M-1
Cabinet Leg	16E60250A09	Walnut, Model SK43W, SK43W-1
Cabinet Lid	16E60250A04	Blond Oak, Model SK43B, SK43B-1
Cabinet Lid	16E60250A03	Mahogany, Model SK43M, SK43M-1
Cabinet Lid	16E60250A08	Walnut, Model SK43W, SK43W-1

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

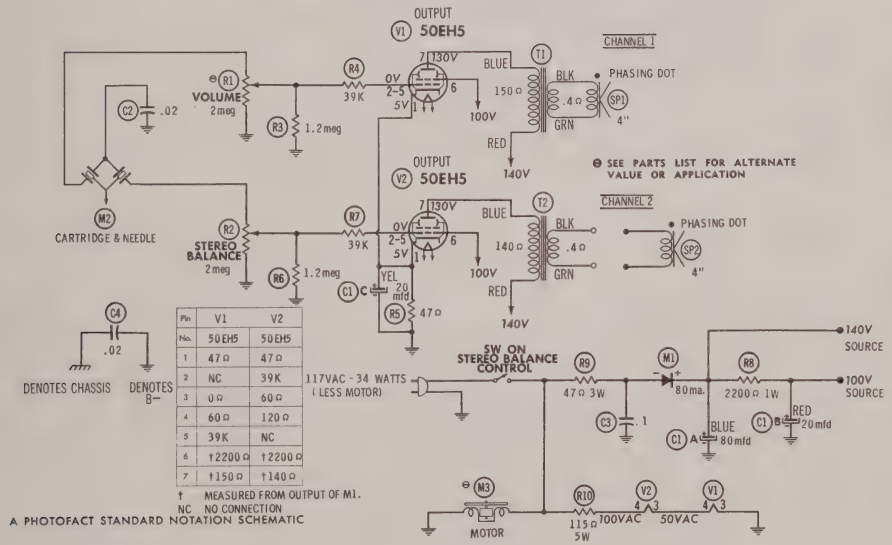
PHOTOFACT® Folder

SILVERTONE MODEL 1254 (Ch. 137.93003)

SILVERTONE MODEL
1254 (Ch. 137.93003)

TRADE NAME	Silvertone Model 1254 (Ch. 137.93003)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	AC Operated 2 Tube Stereo Phono Amplifier With 4 Speed Manual Record Player
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING .35 Amp. @117 Volts AC (Less Motor)

SILVERTONE MODEL
1254 (Ch. 137.93003)



Pin	V1	V2
No.	50EH5	50EH5
1	47Ω	47Ω
2	NC	39K
3	0Ω	60Ω
4	60Ω	120Ω
5	39K	NC
6	†2200Ω	†2200Ω
7	†150Ω	†140Ω

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KR851

SET 558 FOLDER 14

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	GENERAL ELECTRIC • RAYTHEON • SYLVANIA • TYPE
V1	Channel 1 Output	50EH5
V2	Channel 2 Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Silvertone PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	80	150	12145	PRS4650	BBRT84215	QT3-6	TCT3117	TDLT-7	TVA-3437.1
B	20	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C3	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C4	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Silvertone PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	13224 ①	B-76	A47-2meg-Z	Q13-139	U55	Volume, Channel 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	2meg	½	13069	B-76	A47-2meg-Z	Q13-139	TA-26A	Stereo Balance, Channel 2
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26T	Power Off-On

① Alternate Part #13786.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	1.2meg			
R4	39K			
R5	47Ω			
R6	1.2meg			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R7	39K			
R8	2200Ω 1W			
R9	47Ω 3W	PW3-47	3W-SQ-47	
R10	115Ω 5W	PW5-115	5W-SQ-115	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Silvertone PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2500Ω	3-4Ω	(Part of SP1)	A-3025	A-3332	24S53	S-12X	
T2	2900Ω	3-4Ω	13649	A-3025	A-3332	24S53	S-16X	

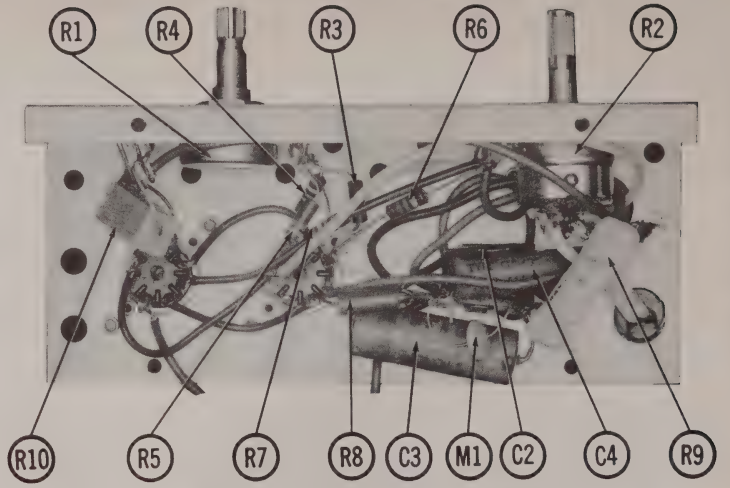
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Silvertone PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	13897 *	4A07	* Includes T1.
SP2	4"	PM	3-4Ω	11792	4A07	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Silvertone PART No.	RCA PART No.	SARKES TARZIAN PART No.	NOTES
M1	.080A	13782	1N1763	F4	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	Silvertone PART No. CARTRIDGE	Silvertone PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	5789 14791-5 ♦	5720 * (LP) 5718 * (78RPM)	76TS KR-74-TS ♦	N8-7 * N8-3 *	96T	Not Req.	12THAS T8C1-12THA-S ♦	N-12THA-S	♦ Includes Tone Arm

MISCELLANEOUS

ITEM No.	PART NAME	Silvertone PART No.	NOTES
M3	Motor	13745-8	Alliance
	Motor	13746-8	G.I.
	Idler Wheel	14912	(Alliance) WALSCO Part No. 1472-01
	Idler Wheel	14913	(G.I.) WALSCO Part No. 1490-01

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	12126-9C	
Handle	13688-6A	With Hardware
Cabinet	14783	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

SYLVANIA MODEL 45C22M (Ch. 646-2)

SYLVANIA MODEL
45C22M (Ch. 646-2)

SYLVANIA MODEL
45C22M (Ch. 646-2)

TRADE NAME	Sylvania Model 45C22M (Ch. 646-2)
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products, Inc., 700 Ellicott St., Batavia, N. Y.
TYPE SET	AC Operated 5 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 65 Watts, .63 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR V-M 1572 – PHOTOFACT SET 527 FOLDER 14

SET 558 FOLDER 15

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KT843

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •			• RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel AF Amp.	12AX7	V4	Right Channel Output	6BQ5
V2	Left Channel Output	6BQ5	V5	Rectifier	5Y3GT
V3	Right Channel AF Amp.	12AX7			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	■80	450	161-3053	AFH3-46	C0370	XC3-32	TMT-3763	TVL-3793	
B	▲40	450							
C	▲20	450							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05		BPD-05	DD-503	CUB6S5	6DP-3-503	GP150	5HK-S50
C3	.02	Note 1	BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C4	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C5	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C6	.05		BPD-05	DD-503	CUB6S5	6DP-3-503	GP150	5HK-S50
C7	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C8	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C9	2.2mfd 3V			UK-225				HY-150
C10	2.2mfd 3V			UK-225				HY-150

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2.2meg	½	153-0250	BT-175*				Loudness, Right Channel
	530K Tap							
B	2.2meg	½		STR-175*				Loudness, Left Channel
	530K Tap							
R2A	1meg	½	153-0248	B-70	AD47-1meg-Z		FA16A	Treble, Right Channel
B	1meg	½		SR-70	Not Req.		RU16A	Treble, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	
R3A	1meg	½	153-0248	B-70	AD47-1meg-Z		FA16A	Bass, Right Channel
B	1meg	½		SR-70	Not Req.		RU16A	Bass, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	
R4A	1meg	½	153-0246	B-69	A47-1meg-S	Q11-137	U54	Balance
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

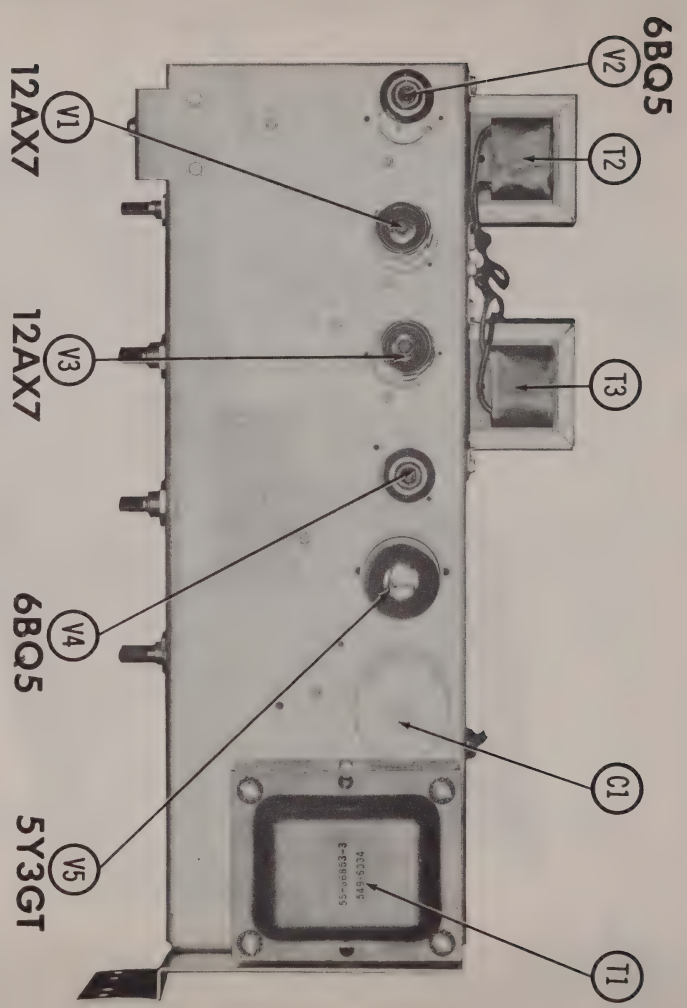
* Do not use tap #2.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	4.7meg				R14	4700Ω			
R6	330K				R15	330K			
R7	4700Ω				R16	10K			
R8	330K				R17	120K			
R9	10K				R18	470K			
R10	120K				R19	270Ω 1W			
R11	470K				R20	33K			
R12	270Ω 1W				R21	1200Ω 2W			
R13	330K								

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SYLVANIA PART No.	REPLACEMENT DATA
K1 K2	Loudness Comp. Tone Comp.	50mmf, .005mfd, 47K 100mmf, .0022mfd, .0022mfd, .01mfd, 18K, 56K, 150K	190-0064 190-0063	
K3 K4	Loudness Comp. Tone Comp.	50mmf, .005mfd, 47K 100mmf, .0022mfd, .0022mfd, .01mfd, 18K, 56K, 150K	190-0064 190-0063	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA: SYLVANIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC. 1	SEC. 2						
T1	117V @ .63A	640V CT @ .080A DC	5V @	141-0090		PM-8404 ①			① Tape CT on 6.3V Winding.
	SEC. 3	SEC. 4	SEC. 5						
	6V @ 2A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA: SYLVANIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC.						
T2	5800Ω	3-4Ω	143-0105	A-3019	A-8092	26S49	S-5Z	
T3	5800Ω	3-4Ω	143-0105	A-3019	A-8092	26S49	S-5Z	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA: SYLVANIA PART No.	QUAM PART No.	NOTES
	SIZE	FIELD	V. C. IMP.			
SP1	10"	PM	3-4Ω	539-1011	10A4A	
SP2	3"	PM	14-16Ω	539-0302		
SP3	8"	PM	3-4Ω	539-0813	8A31	
SP4	3"	PM	14-16Ω	539-0302		

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA: SYLVANIA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		NOTES
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1			70-TS-TB	N8-7* (LP) N8-3* (78RPM)	96T	Not Req.	12TH-S	N-12TH-S*	

CABINETS & CABINET PARTS

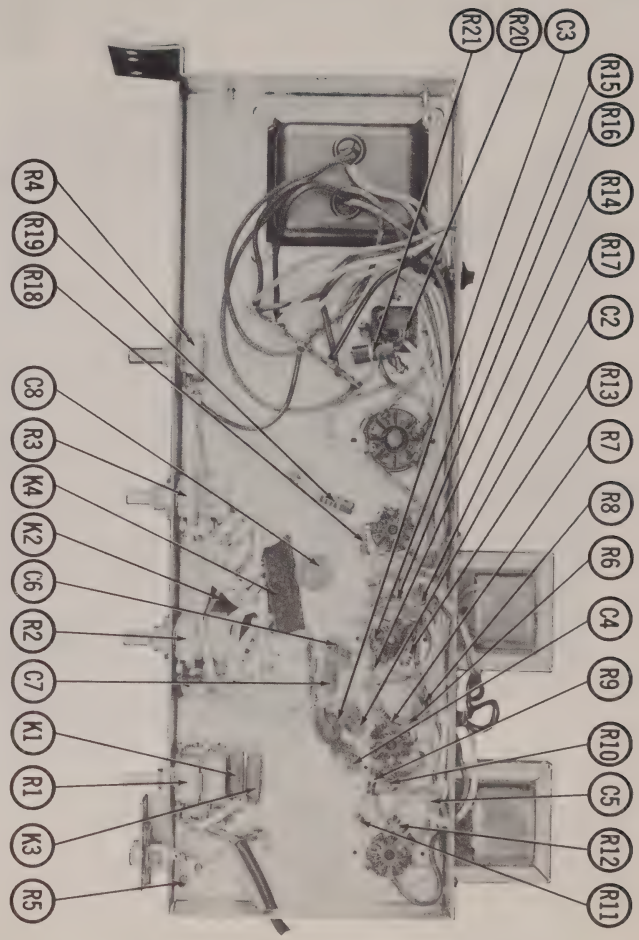
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

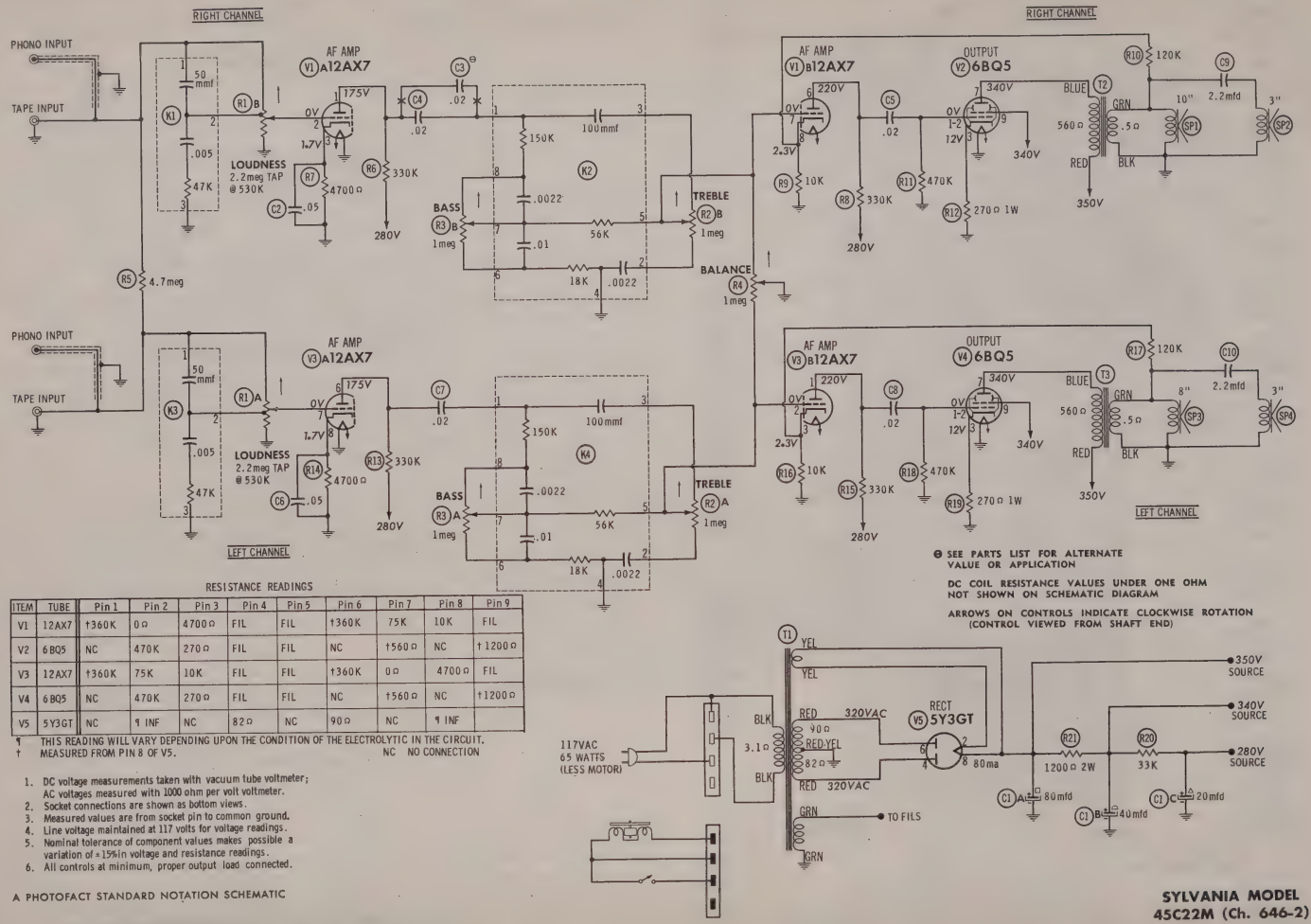
NAME	PART NO.	DESCRIPTION
Knob	740-0427	
45RPM Spindle	922-0018	
Control Panel	714-0197	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†360K	0Ω	4700Ω	FIL	FIL	†360K	75K	10K	FIL
V2	6BQ5	NC	470K	270Ω	FIL	FIL	NC	†560Ω	NC	†1200Ω
V3	12AX7	†360K	75K	10K	FIL	FIL	†360K	0Ω	4700Ω	FIL
V4	6BQ5	NC	470K	270Ω	FIL	FIL	NC	†560Ω	NC	†1200Ω
V5	5Y3GT	NC	¶ INF	NC	82Ω	NC	90Ω	NC	¶ INF	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V5. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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SYLVANIA MODEL 45C22M (Ch. 646-2)

PHOTOFACT® Folder

ZENITH MODELS SFF2501 Series, SFF2601 Series, FT11 (Ch. 4F20, 7F20)

ZENITH MODELS SFF2501 Series, SFF2601 Series, FT11 (Ch. 4F20, 7F20)

MODEL SFF2601H

ZENITH MODELS SFF2501 Series, SFF2601 Series, FT11 (Ch. 4F20, 7F20)

TRADE NAME	Zenith Models	SFF2501ET, SFF2501HT, SFF2501RT, SFF2501WT (Amp. Ch. 4F20) SFF2601E, SFF2601H, SFF2601R, SFF2601W (Tuner Ch. 7F20, Amp. Ch. 4F20) FT11 is a "Drop In" Tuner Ch. 7F20 for SFF2501 Series
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois	
TYPE SET	AC - Operated 7 Tube FM-AM Tuner, 4 Tube Stereo Amplifier and 4 Speed Automatic Record Changer (Tuner Chassis not used in All Models)	
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles	RATING Tuner: 33 Watts, .28 Amp. @117 Volts AC Amp: 67 Watts, .62 Amp. @117 Volts AC (Less Motor)
TUNING RANGES – BROADCAST	540 – 1600KC	FREQ. MOD. 88 – 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER 169-133 – SEE SIMILAR V-M 1571 – PHOTOFACT SET 527 FOLDER 14

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KN877

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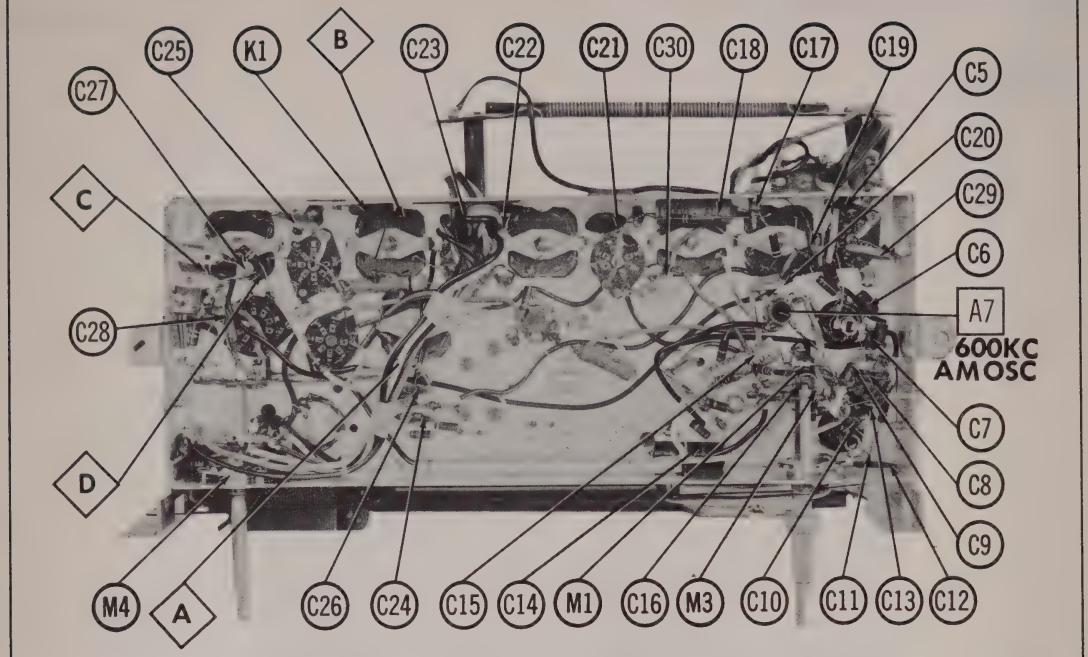
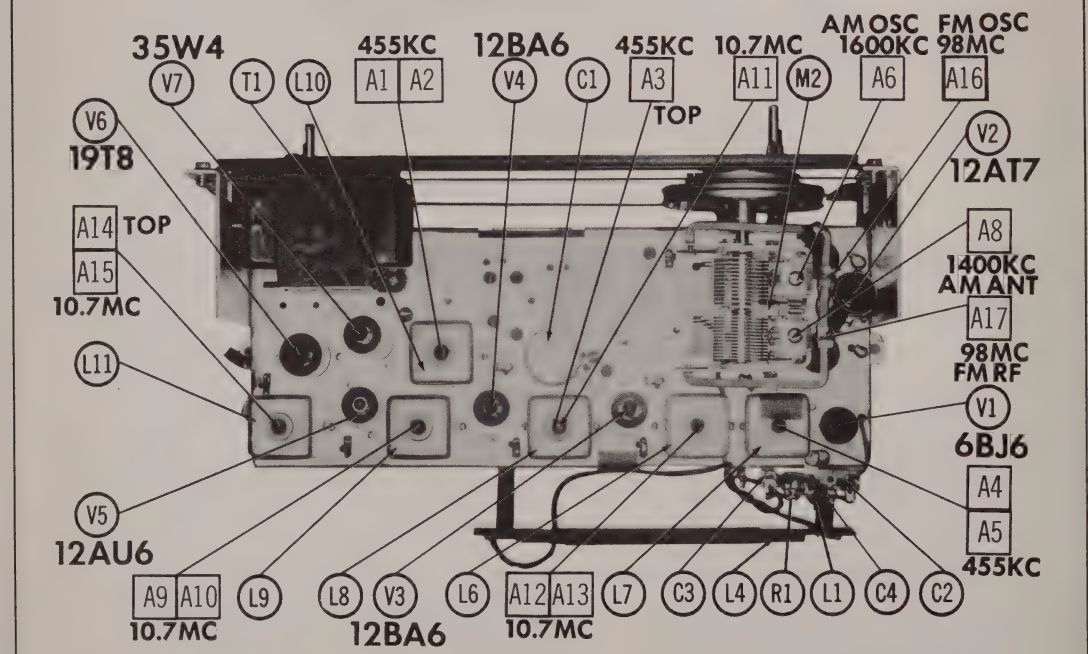
SET 558 FOLDER 16



TUNER CHASSIS BOTTOM VIEW-ALIGN., CAPACITOR & MISC. IDENT.



TUNER CHASSIS-TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication. Set volume control at maximum position.
Suggested Alignment Tools:

A1 thru A5, A7, A9 thru A15...GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

A6, A8.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .05mfd to pin 2 (grid) of AM Mixer. Low side to chassis.	455KC (400∿ 30% AM)	(AM) Tuning gang fully open.	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4, A5	Adjust for maximum deflection.
2.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1600KC	1600KC	"	A6	"
3.	"	600KC	600KC	"	A7	"
4.	"	1400KC	1400KC Signal.	"	A8	Adjust for maximum deflection. Repeat Steps 2, 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .05mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓑ. Common to chassis.	A9, A10, A11, A12, A13	Adjust for maximum deflection.
6.	"	"	"	DC probe thru 1meg to point Ⓒ Common to chassis.	A14	"
7.	"	"	"	DC probe to point Ⓓ. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .05mfd to pin2 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓑ. Low side to chassis.	A9, A10, A11, A12, A13	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	"	"	Vert. amp. thru 47K to point Ⓒ. Low side to chassis.	A14	"
7.	"	"	"	Vert. amp. to point Ⓓ. Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Across FM antenna terminals with 120Ω in each lead.	98MC (Unmod.)	(FM) 98MC	DC probe to point Ⓑ. Common to chassis.	A16, A17	Adjust for maximum deflection.

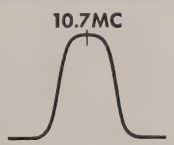


FIG. 1

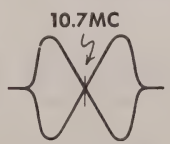
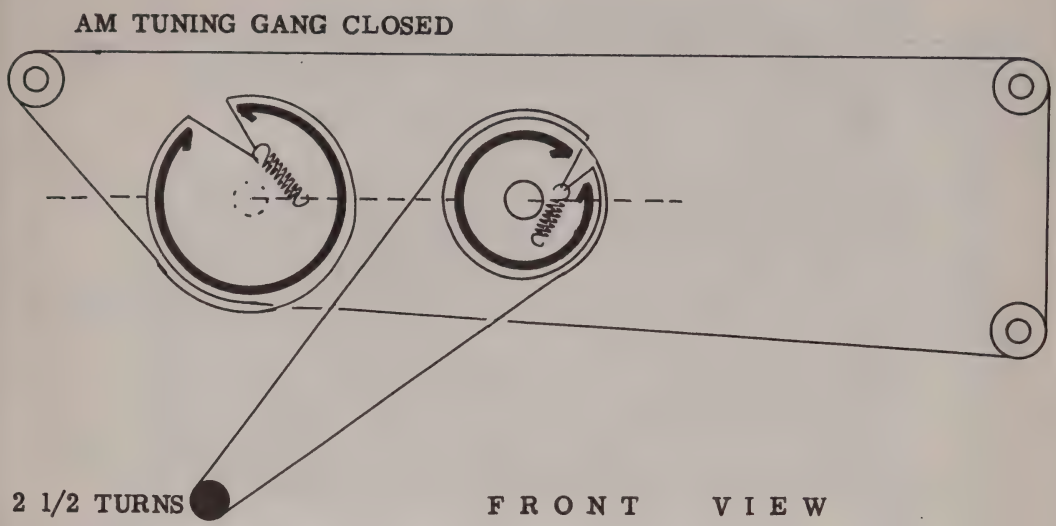
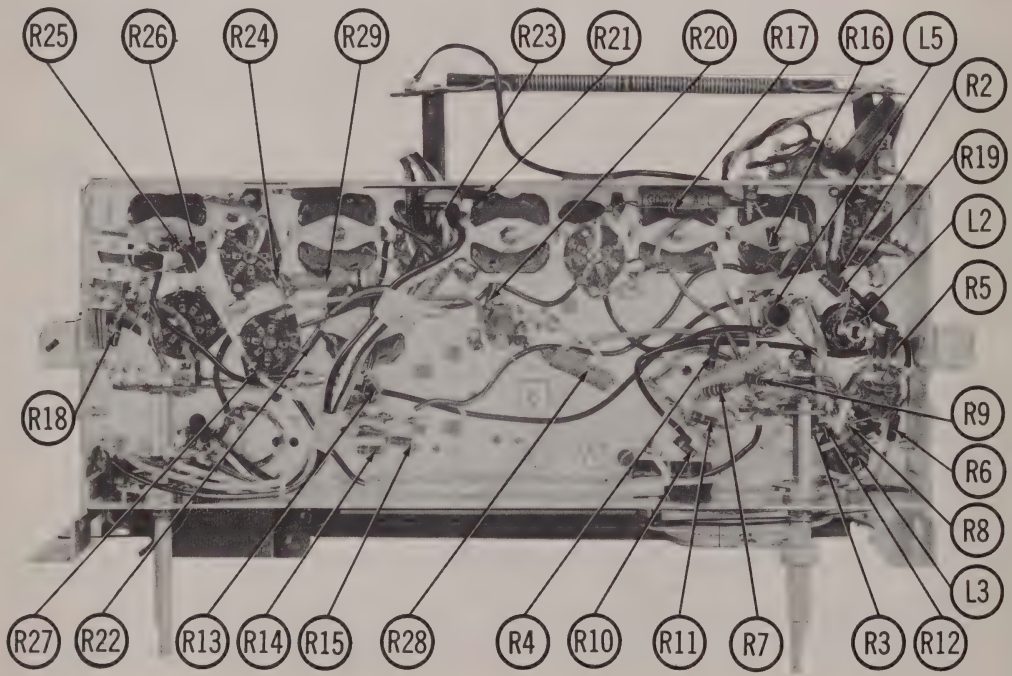


FIG. 2



DIAL CORD STRINGING



TUNER CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	FM RF Amplifier	6BJ6
V2	FM Mixer-FM Osc., - AM Mixer-AM Osc.	12AT7
V3	1st FM-AM IF Amp.	12BA6
V4	2nd FM-AM IF Amp.	12BA6
V5	FM Limiter	12AU6
V6	Disc. -AM Det.	19T8
V7	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	■80	150	22-3056	AFH2-19	B0180	XC2-30	FP216.2	TMD-2135	TVL-2442.1
B	▲40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	15 N330 10%	#22-3246				*		10TS-Q15
C3	15 N330 10%	#22-3246				*		10TS-Q15
C4	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C5	.001		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C6	.001		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C7	22 N075 5%	#22-2372				*		
C8	.68 10%		NPO-SI .68	TCZ-R68				
C9	.001		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	4 NPO 5%				C10V4C			10TCC-V39
C11	19 N150 5%	#22-3231				*		10TCP-Q18
C12	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C13	50 N330	#22-2370				*		10TCS-Q47
C14	.1 200V		P288N-1	DF-102	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C15	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C16	.001		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C17	.001		EF-001	MFT-1000		CCF-102	CT280A	
C18	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C19	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C20	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C21	.0047		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C22	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C23	.0022		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C24	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C25	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10
C26	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C27	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C28	.0047 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C29A	.0047		BPD-2X0047	DD-502	BYC6DD47	CCD-472	B-247	5HK-2D47
B	.0047			DD-502		CCD-472	B-247	
C30	.01		BPD-01	DD-103	BYA10Si	CCD-103	B-110	5HK-S10

Zenith Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	IRC PART No.	WORKMAN TV PART No.	REMARKS
R1	2.2meg			
R2	220Ω			
R3	220Ω			
R4	1000Ω			
R5	2200Ω			
R6	10K			
R7	390K			
R8	100K			
R9	3.9meg			
R10	1.5meg			
R11	1000Ω			
R12	2.2meg			
R13	47K			
R14	220K			
R15	2.2meg			
R16	4.7meg			
R17	4.7meg			
R18	220K			
R19	220Ω			
R20	220Ω			
R21	100K			
R22	220Ω			
R23	100Ω			
R24	15K			
R25	150K			
R26	150K			
R27	100K			
R28	820Ω 3W	PW3-820	3W-SW-820	
R29	39Ω 1W			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ZENITH PART No.	REPLACEMENT DATA
K1	Limiter Grid	25mmf, 100K	105-42	

COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	FM Ant. (1.1uh)	20-682	BC-561	4602	RTC-8515	T855	
L2	FM RF	S-13871					
L3	FM Osc.	S-15691					
L4	Loopstick	S-49113	BC-419	705-A		T532	
L5	AM Osc.	S-43067					
L6	1st FM IF	95-1150	FM-251	1451	RTC-9038	T630	
L7	1st AM IF	95-1250	BC-347	12-C12	RTC-8677		
L8A	2nd FM IF	95-1251					
B	2nd AM IF						
L9	3rd FM IF	95-1150	FM-251	1451	RTC-9038	T630	
L10	3rd AM IF	95-1102	BC-355	12-C6	RTC-8634	T609	
L11	Discriminator	95-1153					

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V@ .28A	115V@ .230A AC Tap@ 6.3V@ .5A		95-1772					

SIGNAL DIODES

ITEM No.	ORIG. TYPE	ZENITH PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M1	WFN2740M	103-29			AFC (Varicap silicon diode).

RESISTORS (cont)

ITEM No.	RATING	IRC PART No.	WORKMAN TV PART No.	REMARKS
R17	4.7meg			
R18	220K			
R19	220Ω			
R20	220Ω			
R21	100K			
R22	220Ω			
R23	100Ω			
R24	15K			
R25	150K			
R26	150K			
R27	100K			
R28	820Ω 3W	PW3-820	3W-SW-820	
R29	39Ω 1W			

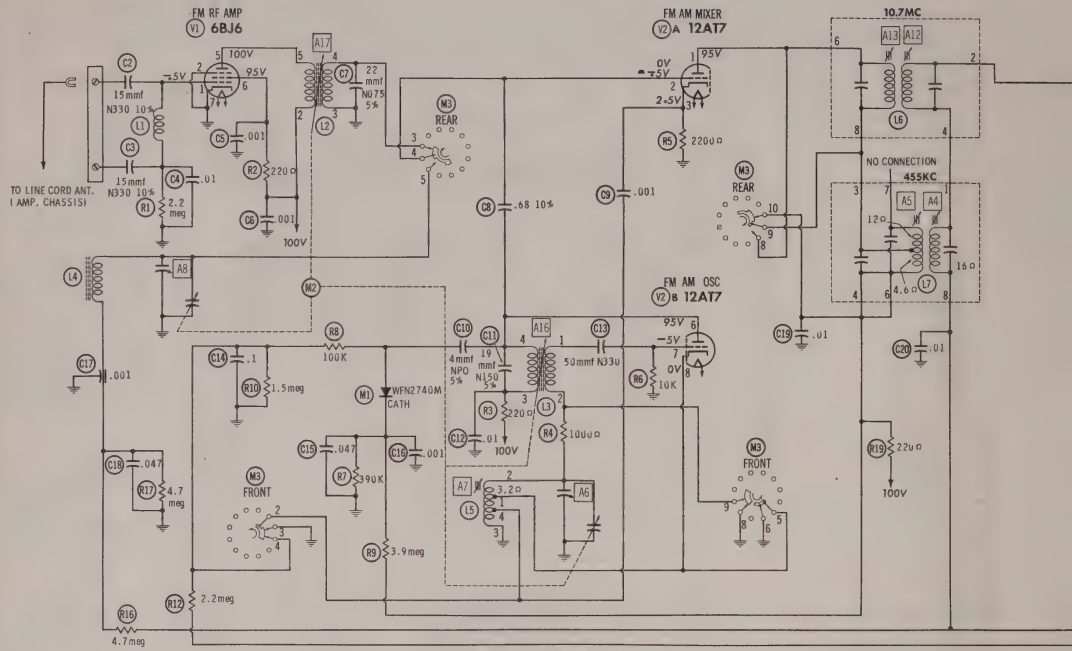
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Tuning Cap.	22-3039	2 Gang (Ant. 7-403mmf, Osc. 9-134mmf)
M3	Switch	85-673	Band Selector (Rotary Wafer Type)
M4	Switch	85-672	Phono-Off-Radio (Function, Rotary Wafer)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BJ6	2.2meg	0Ω	40Ω	45Ω	†820Ω	†1000Ω	0Ω		
V2	12AT7	†1000Ω	.1Ω *.3meg	2200Ω	45Ω	50Ω	†1000Ω	10K	0Ω *.4Ω	NC
V3	12BA6	2.2meg	0Ω	50Ω	40Ω	†1000Ω	†1000Ω	0Ω		
V4	12BA6	100K	0Ω	40Ω	35Ω	†1000Ω	†1000Ω	100Ω		
V5	12AU6	100K	0Ω	20Ω	14Ω	†16K	†16K	0Ω		
V6	19T8	150K	150K	300K	0Ω	14Ω	*270K	0Ω	NC	NC
V7	35W4	TP	NC	40Ω	10Ω	10Ω	NC	¶ INF		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED IN "AM" POSITION.
† MEASURED FROM PIN 7 OF V7.

NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

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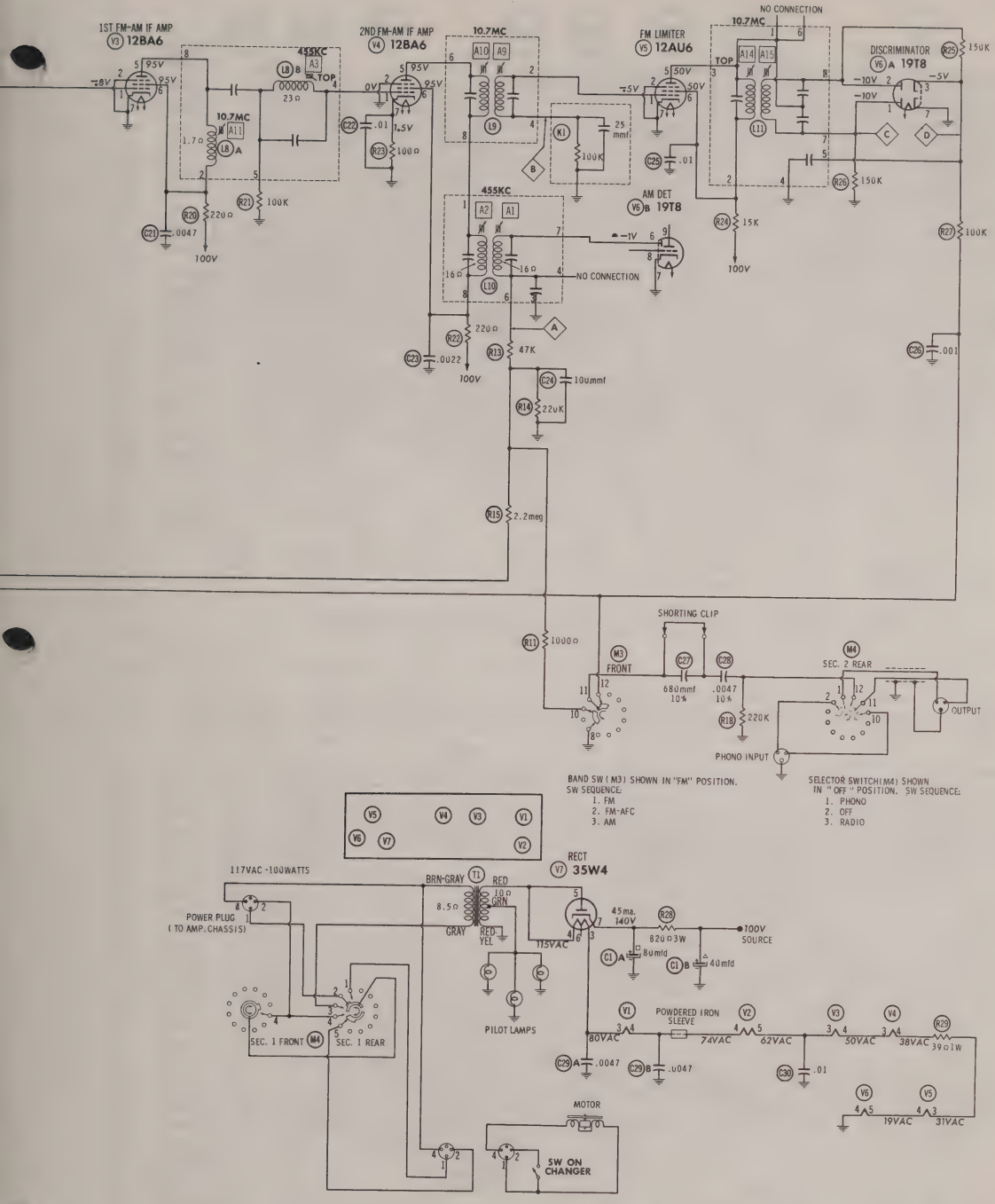
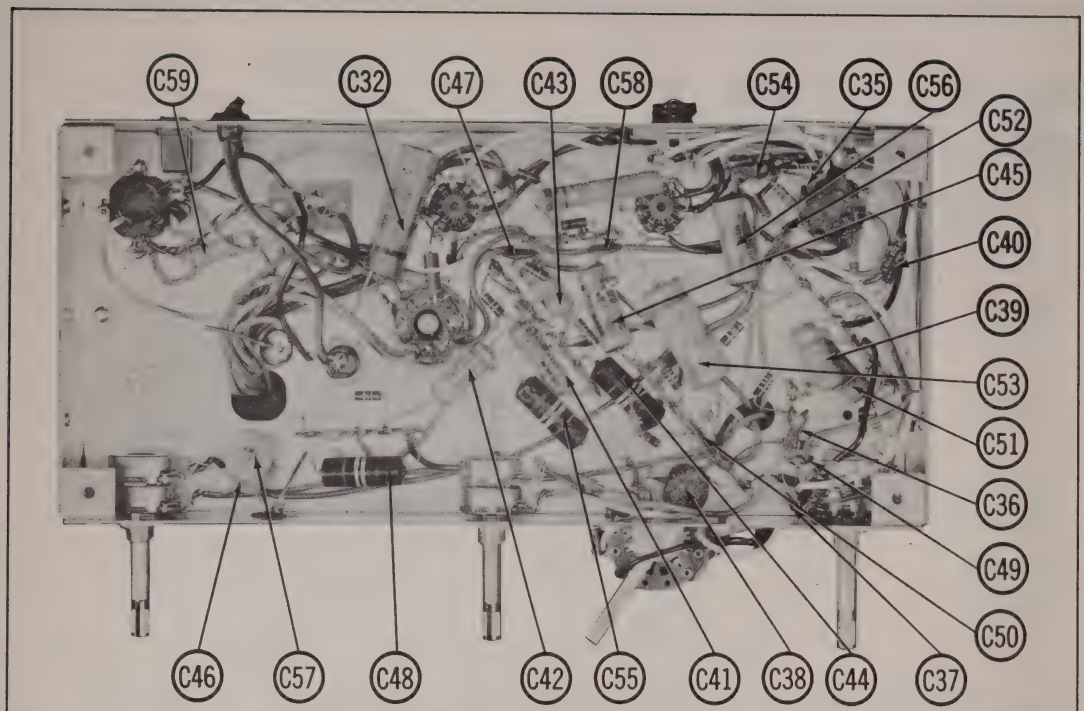
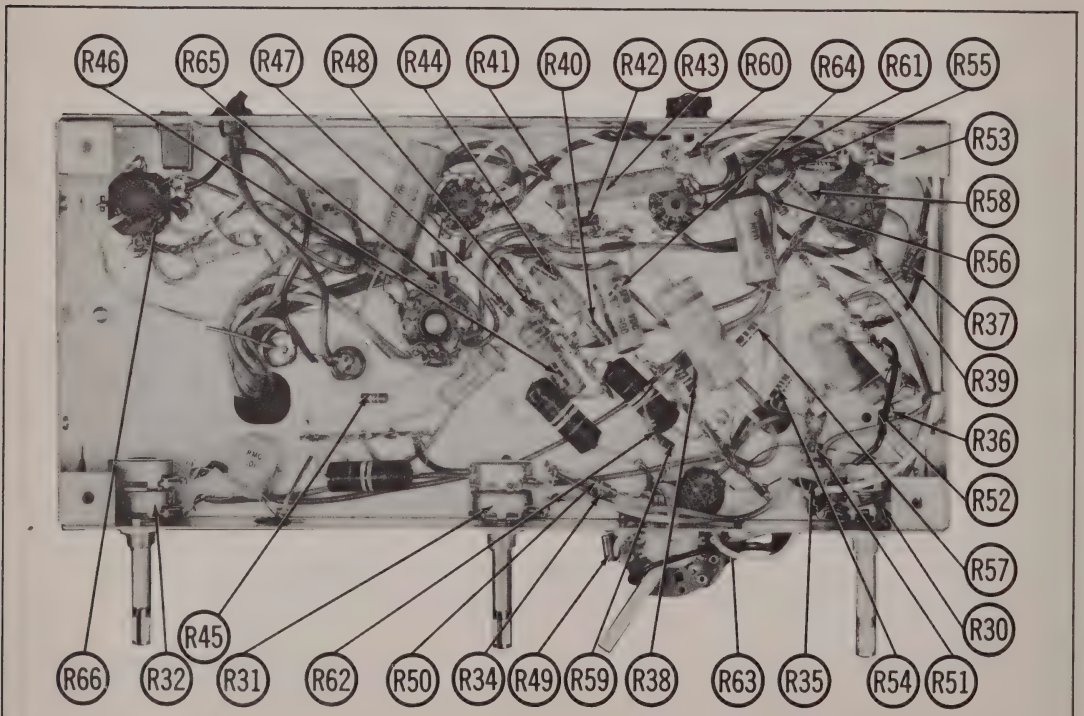
TUNER SCHEMATIC



**ZENITH MODELS SFF2501 Series,
SFF2601 Series, FT11 (Ch. 4F20, 7F20)**



AMP CHASSIS BOTTOM VIEW-CAPACITOR IDENT.



AMP CHASSIS BOTTOM VIEW-RESISTOR IDENT.

AMP PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V8	Left Channel AF Amp. - Right Channel AF Amp.	12AX7	V10	Right Channel Output	6BQ5
V9	Left Channel Output	6BQ5	V11	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C31A	▲80	450	22-3045 ①	AFH3-46	C0370	XC3-32	FP378	TMT-3763	TVL-3793
B	■40	450							
C	▲20	350							
C32	40	25	22-1156	PRS1470	BR4015	QT1-13	TC48	TD-40-150	TVA-1413
C33	3	30NP	22-2945	PRS7405	BBR4-150	NPQT-1	TCN503		TVANS-1215*
C34	3	30NP	22-2945	PRS7405	BBR4-150	NQPT-1	TCN503		TVANS-1215*

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① In some versions, C31A is 40mfd (C31 Part #22-3046).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

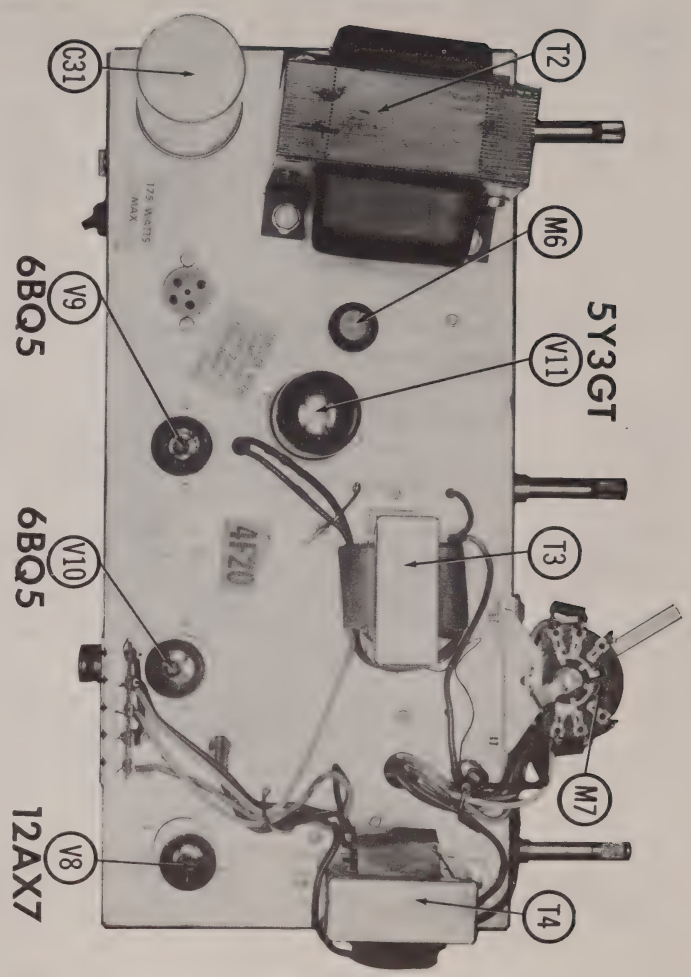
ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C35	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C36	.0015 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C37	30 N75 10%	#22-3327				*		
C38	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C39	.0047 200V 10%		V84C2D47-10%		PM6D47	6DP-1-472	GEM-16247	6TM-D47
C40	.0047 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C41	.033 200V 10%		V84C2S33-10%		PM4S33	4DP-2-333	GEM-1613	6TM-S33
C42	.022 200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-1612	4TM-S22
C43	.022 200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-1612	4TM-S22
C44	.1 200V 10%		V84C2P1-10%		PM2P1	2DP-3-104	GEM-201	2TM-P10
C45	.022 600V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C46	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C47	47 N075 10%	#22-2376				*		
C48	.1 200V 10%		V84C2P1-10%		PM2P1	2DP-3-104	GEM-201	2TM-P10
C49	30 N75 10%	#22-3327				*		
C50	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C51	.0047 200V 10%		V84C2D47-10%		PM6D47	6DP-1-472	GEM-16247	6TM-D47
C52	.0047 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C53	.33 200V 10%		V84C2P33-10%		PM4P33	2DP-5-334	GEM-2033	2PS-P33
C54	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C55	.1 200V 10%		V84C2P1-10%		PM2P1	2DP-3-104	GEM-201	2TM-P10
C56	.022 600V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C57	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C58	47 N075 10%	#22-2376				*		
C59	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10

\# Zenith Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R30A	2meg Taps@ 400K & 1meg	½	63-4729	BT-175			FA26DT16	Loudness, Left Channel
B	2meg Taps@ 400K & 1meg	½		STR-175			RU26DT16	Loudness, Right Channel
C	Shaft			Not Req.			CS3500	

AMP CHASSIS—TOP VIEW



ZENITH MODELS SFF2501 Series, SFF2601 Series, FFI1 (Ch. 4F20, 7F20)

FOLDER 16

AMP PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS (cont)

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R31A	5meg	1/2	63-4734	B-88	AD47-5meg-S		FA56A	Bass, Left Channel
B	5meg	1/2		SR-88	Not Req.		RU56A	Bass, Right Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R32A	500K	1/2	63-4669	B-60	AD47-500K-Z		FA55A	Treble, Left Channel
B	500K	1/2		SR-60	Not Req.		RU55A	Treble, Right Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R33A	100Ω	2(WW)	63-4721	WN-101	A43-100	WPK100	R100L	Speaker Balance
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R34	100K			
R35	150K			
R36	82K			
R37	2.2meg			
R38	220K			
R39	1200Ω			
R40	150Ω			
R41	1000Ω			
R42	1meg			
R43	150Ω 2W			
R44	2700Ω			
R45	6800Ω			
R46	180Ω			
R47	15K			
R48	120K			Note 1
R49	1meg			
R50	180K			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R51	150K			
R52	82K			
R53	1meg			
R54	18K			
R55	33K			
R56	2.2meg			
R57	220K			
R58	1200Ω			
R59	150Ω			
R60	1000Ω			
R61	1meg			
R62	12K			
R63	1meg			
R64	390Ω			
R65	8200Ω 1W			
R66	5600Ω			

Note 1. Not used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	117V @ .52A	700VCT @ .070A DC	5V @ 2A	95-1743	P-3152 ①	PC-8409 ①	24R40U ①	① R-111A	① Drill new mounting hole(s).
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT @ 1.8A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	4100Ω	6-8Ω	95-1790					
		SEC. 2						
		75Ω						
		SEC. 1						
T4	7600Ω	12-16Ω CT	95-1780					
		SEC. 2						
		25Ω						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	10"	PM	6-8Ω	49-914*	10A4AZ6.4	* Some versions may use Part #49-924.
SP2	4"x 6"	PM	6-8Ω	49-842 †	46A1Z6.4	† Some versions may use Part #49-923.
SP3	10"	PM	6-8Ω	49-914*	10A4AZ6.4	
SP4	4"x 6"	PM	6-8Ω	49-842 †	46A1Z6.4	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	ZENITH PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M5	142-103	Not Req.			66	Not Req.	16TS	Not Req.	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M6	3AG	2A 250V	136-36	15-201	312002 (3AG 2A 250V)	342001	AGC 2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M7	Switch	85-678	Mono-Stereo (Rotary, Lever Operated)

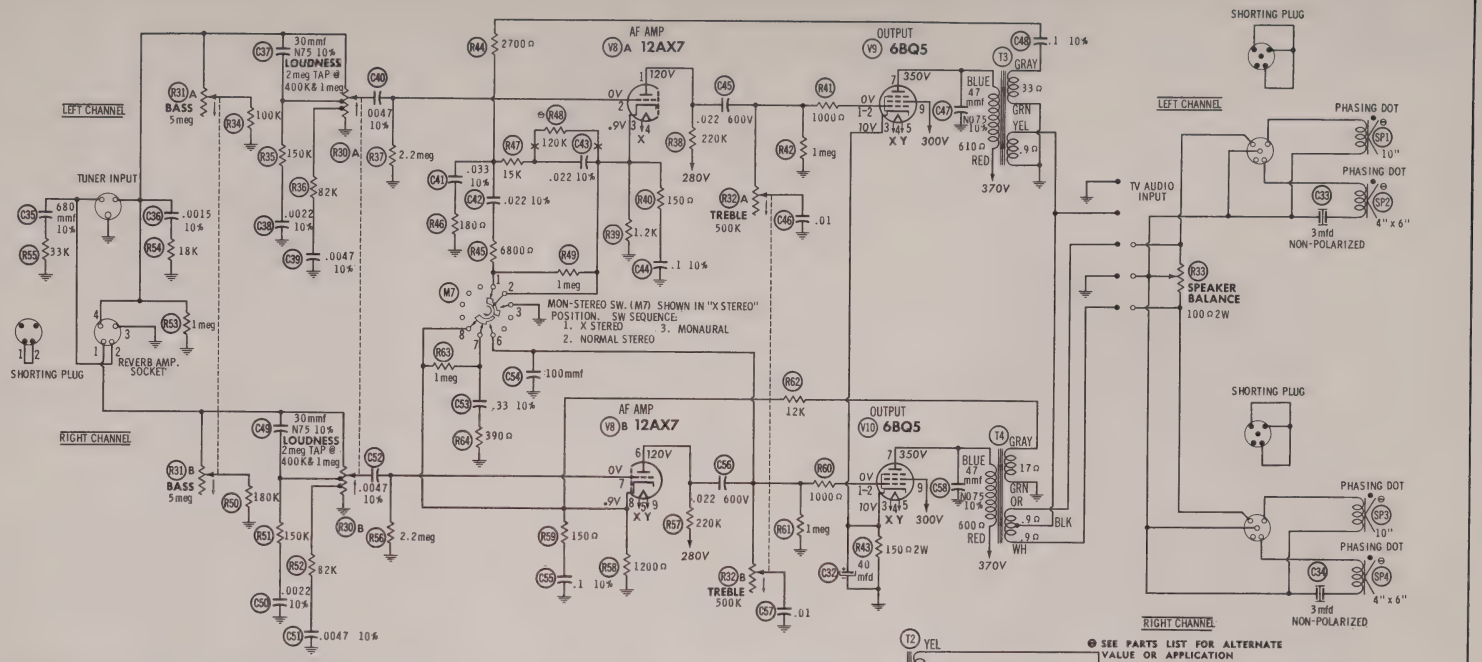
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Scale	26-685	
Dial Crystal	192-296	
Dial Pointer	59-380	
Dial Pointer	59-381	
Knob	8-44166	Tuning
Knob	8-47939	Bandswitch, Function Selector
Knob	46-2263	Loudness, Bass, Treble
Knob	46-2306	Balance
Knob	46-2586	Monaural-Stereo
Cabinet	14-3327	Model SFF2501WT, SFF2601W
Cabinet	14-3328	Model SFF2501RT, SFF2601R
Cabinet	14-3329	Model SFF2501ET, SFF2601E
Cabinet	14-3330	Model SFF2501HT, SFF2601H

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)



RESISTANCE READINGS (Cont.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V8	12AX7	†234K	2.2meg	1200Ω	FIL	FIL	†234K	2.2meg	1200Ω	FIL
V9	6BQ5	NC	1meg	150Ω	FIL	FIL	NC	†610Ω	NC	†8200Ω
V10	6BQ5	NC	1meg	150Ω	FIL	FIL	NC	†600Ω	NC	†8200Ω
V11	5Y3GT	NC	¶ INF	NC	215Ω	NC	200Ω	NC	¶ INF	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V11. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ZENITH MODELS SFF2501 Series, SFF2601 Series, FT11 (Ch. 4F20, 7F20)

AMP SCHEMATIC

ZENITH MODELS SFF2501 Series, SFF2601 Series, FT11 (Ch. 4F20, 7F20)

PHOTOFACT® Folder

ZENITH CHASSIS 5F29, 7F20

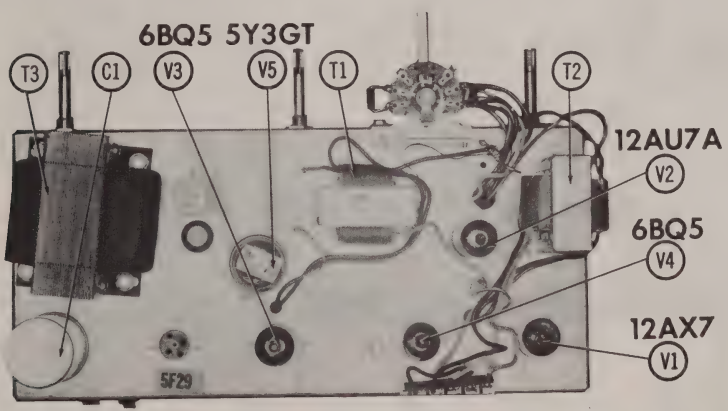
ZENITH CHASSIS 5F29, 7F20

MODEL SFF2505ET

TRADE NAME	Zenith Models	SFF2503ET, SFF2503RT, SFF2503WT, SFF2505ET, SFF2505RT, SFF2505WT (Amp. Ch. 5F29) SFF2603E, SFF2603R, SFF2603W, SFF2605E, SFF2605R, SFF2605W, SFF2606R, SFF2606W, SFF2607M (Tuner Ch. 7F20*, Amp. Ch. 5F29)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois	
TYPE SET	SFF25 Series: SFF26 Series:	AC Operated 5 Tube Stereo Amplifier With 4 Speed Automatic Record Changer AC Operated 7 Tube FM-AM Tuner*, 5 Tube Stereo Amplifier And 4 Speed Automatic Record Changer
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles	RATING Tuner: 33 Watts, .28 Amp. @117 Volts AC Amp: 71 Watts, .66 Amp. @117 Volts AC

* FOR SERVICE INFORMATION ON FM-AM TUNER CHASSIS 7F20 — SEE FOLDER 16 IN THIS PHOTOFACT SET

FOR SERVICE INFORMATION ON RECORD CHANGER 169-131 USED IN MODELS SFF2505, SFF2605, SFF2606, SFF2607 OR RECORD CHANGER 169-133 USED IN MODELS SFF2503, SFF2603 — SEE SIMILAR V-M 1586 — PHOTOFACT SET 527 FOLDER 14



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KT916

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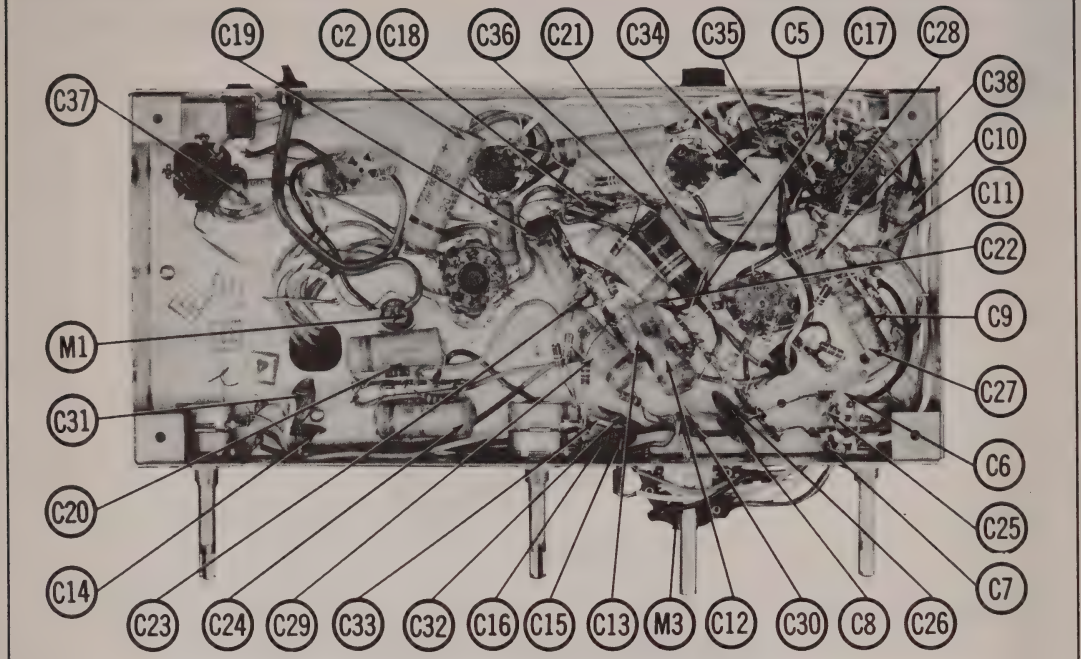
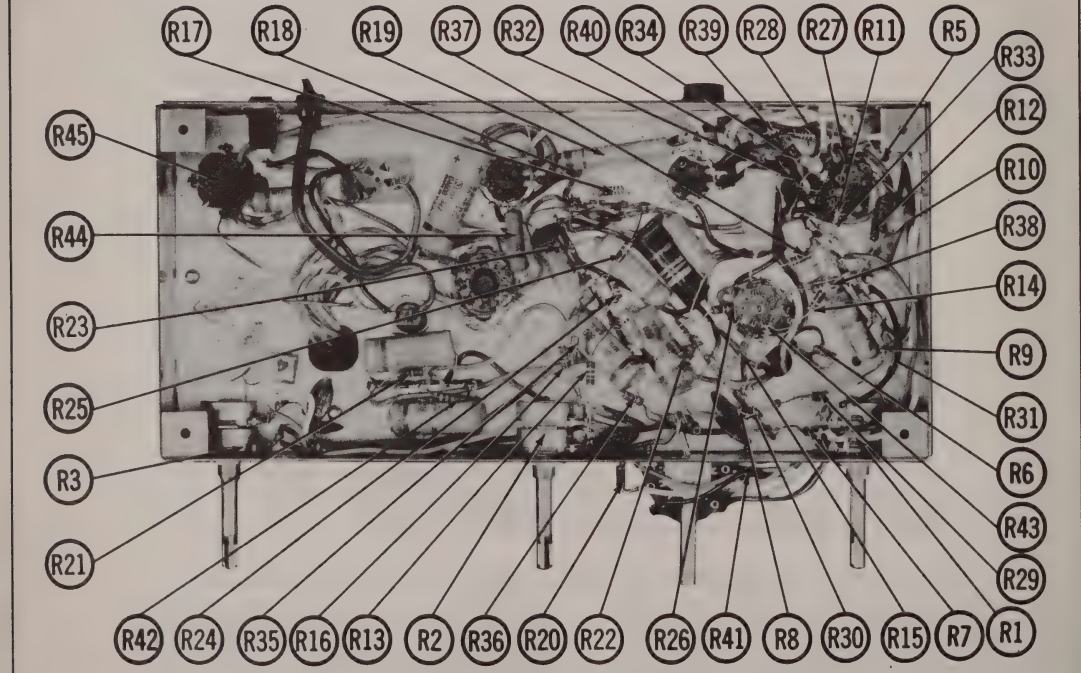
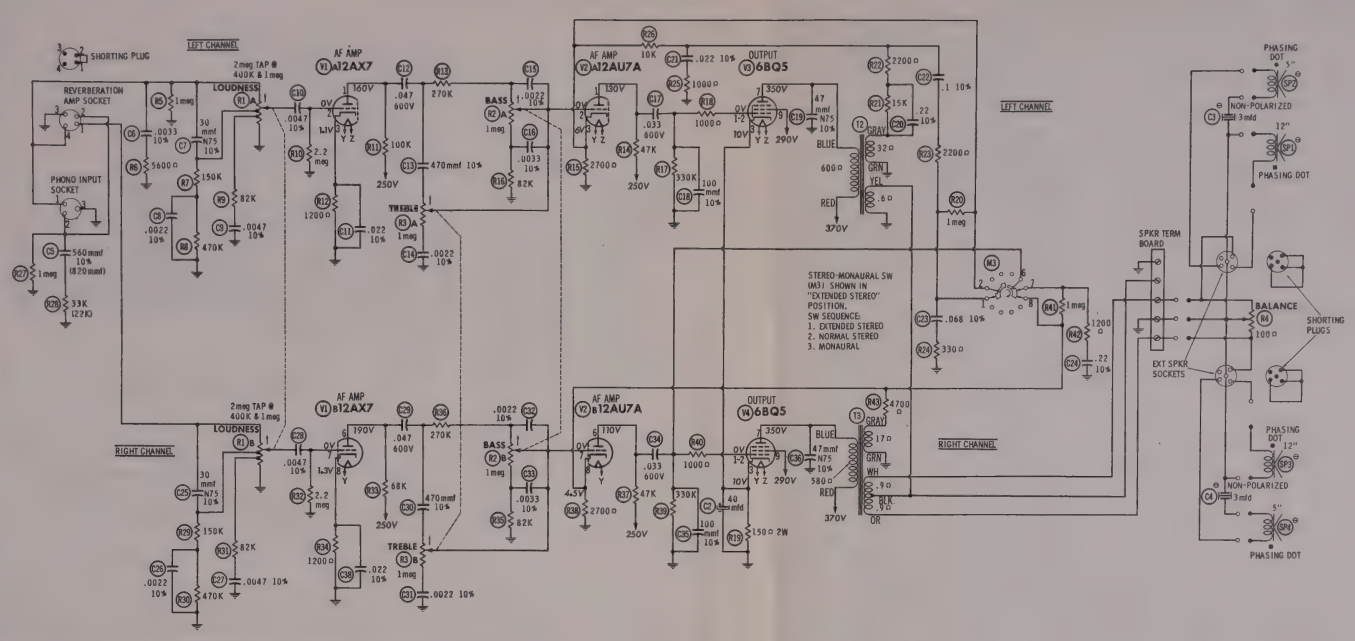
SET 558 FOLDER 17



CHASSIS BOTTOM VIEW-CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW-RESISTOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†110K	2.2meg	1200Ω	FIL	FIL	†78K	2.2meg	1200Ω	FIL
V2	12AU7A	†57K	82K	2500Ω	FIL	FIL	†57K	82K	1800Ω	FIL
V3	6BQ5	NC	330K	150Ω	FIL	FIL	NC	†600Ω	NC	†5000Ω
V4	6BQ5	NC	330K	150Ω	FIL	FIL	NC	†580Ω	NC	†5000Ω
V5	5Y3GT	NC	¶ INF	NC	205Ω	NC	190Ω	NC	¶ INF	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V5. NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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ZENITH CHASSIS 5F29, 7F20

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	Left Channel AF Amp. - Right Channel AF Amp.	12AX7
V2	Left Channel AF Amp. - Right Channel AF Amp.	12AU7A
V3	Left Channel Output	6BQ5
V4	Right Channel Output	6BQ5
V5	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1A	▪40	450	22-3046	AFH-3-43-50	C0344	XC3-29	FP376.9	TMT-3745	TVL-3786
B	▪40	450							
C	▲20	350							
C2	40	25	22-1156	PRS1470	BR4015	QT1-13	TC48	TD-40-150	TVA-1413
C3	3	30NP	22-2945 Note 1	PRS7405	BBR4-150	NPQT-1	TCN503		TVANS-1215*
C4	3	30NP	22-2945 Note 1	PRS7405	BBR4-150	NPQT-1	TCN503		TVANS-1215*

Note 1. Models SFF2503 Series and SFF2603 Series use 1mfd in this application (Part #22-3374).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	560 10%	(820) †		D6-561	5R5T56	CCD-561	GP356	10TS-T56
C6	.0033 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C7	30 N75 10%	#22-3327				*		
C8	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C9	.0047 200V 10%		V84C2D47-10%		PM6D47	6DP-1-222	GEM-16247	6TM-D47
C10	.0047 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C11	.022 200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-1612	2TM-S22
C12	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C13	470 10%			D6-471	5R5T47	CCD-471	GP347	10TS-T47
C14	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C15	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C16	.0033 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C17	.033 600V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C18	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C19	47 N75 10%	#22-2376				*		

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C20	.22 200V 10%		V84C2P22-10%		PM2P22	2DP-4-224	GEM-2022	2TM-P22
C21	.022 200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-16122	2TM-S22
C22	.1 200V 10%		V84C2P1-10%		PM2P1	2DP-1-104	GEM-201	2TM-P10
C23	.068 200V 10%		V84C2S68-10%		PM4S68	4DP-3-683		4TM-S68
C24	.22 200V 10%		V84C2P22-10%		PM2P22	2DP-4-224	GEM-2022	2TM-P22
C25	30 N75 10%	#22-3327				*		
C26	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C27	.0047 200V 10%		V84C2D47-10%		PM6D47	6DP-1-472	GEM-16247	6TM-D47
C28	.0047 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C29	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C30	470 10%			D6-471	5R5T47	CCD-471	GP347	10TS-T47
C31	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C32	.0022 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C33	.0033 10%		DI-3300		PM6D33	CCD-332	JL-233	10TS-D33
C34	.033 600V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C35	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C36	47 N75 10%	#22-2376				*		
C37	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C38	.022 200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-1612	2TM-S22

\# Zenith Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Alternate Value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg*	½	63-4729	B7-175			FA26DT16	Loudness, Left Channel
B	2meg*	½		STR-175			RU26DT16	Loudness, Right Channel
C	Shaft			Not Req.			CS3500	
R2A	1meg	½	63-4730	B-70	AD47-1meg-Z		FA16A	Bass, Left Channel
B	1meg	½		SR-70	Not Req.		RU16A	Bass, Right Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	1meg	½	63-4448	B-69	AD47-1meg-S		FA16L	Treble, Left Channel
B	1meg	½		SR-69	Not Req.		RU16L	Treble, Right Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	100Ω	2(WW)	63-4721	WN-101	A43-100	WPK100	R100L	Balance
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

* Taps @ 400K & 1meg.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	1meg			
R6	5600Ω			
R7	150K			
R8	470K			
R9	82K			
R10	2.2meg			
R11	100K			
R12	1200Ω			
R13	270K			
R14	47K			
R15	2700Ω			
R16	82K			
R17	330K			
R18	1000Ω			
R19	150Ω 2W			
R20	1meg			
R21	15K			
R22	2200Ω			
R23	2200Ω			
R24	330Ω			
R25	1000Ω			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R26	10K			
R27	1meg			
R28	33K			(22K) *
R29	150K			
R30	470K			
R31	82K			
R32	2.2meg			
R33	68K			
R34	1200Ω			
R35	82K			
R36	270K			
R37	47K			
R38	2700Ω			
R39	330K			
R40	1000Ω			
R41	1meg			
R42	1200Ω			
R43	4700Ω			
R44	5000Ω 3W	PW3-5000	3W-5000	
R45	5600Ω			

* Alternate Value.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V@ .66A	700VCT @.075A DC	5V@ 2A	95-1743	P-3152①	PC-8409①	24R40U①	R-111A①	① Drill New Mounting Hole(s).
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT @2.1A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	9700Ω	3-4Ω	95-1790					
		SEC. 2						
		135Ω						
T3	7600Ω	SEC. 1	95-1780					
		12-16Ω						
		SEC. 2						
		25Ω						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	49-852*	12A6PA	* Models SFF2505, SFF2605, SFF2606, SFF2607
SP2	5"	PM	3-4Ω	49-856*	5A1	
SP3	12"	PM	6-8Ω	49-852*	12A6PA	‡ Models SFF2503, SFF2603
SP4	5"	PM	3-4Ω	49-856*	5A1	
	5 1/4"	PM	3-4Ω	49-896 ‡	52A1	
	10"	PM	6-8Ω	49-916 ‡	10A6AZ6	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 250V	136-36	15-201	312002 (3AG 2A 250V)	342001	AGC 2	HKP

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	ZENITH PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2	142-108	Not Req.			106	Not Req.			

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Switch Spindle	85-678 S-46112	Stereo-Mono (Rotary Type, Lever Operated) 45 RPM

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	46-2263	Loudness, Bass, Treble
Knob	46-2306	Balance
Knob	46-2586	Monaural-Stereo
Cabinet	14-3311	Models SFF2503WT, SFF2603W
Cabinet	14-3312	Models SFF2503RT, SFF2603R
Cabinet	14-3313	Models SFF2503ET, SFF2603E
Cabinet	14-3318	Model SFF2606W
Cabinet	14-3319	Model SFF2606R
Cabinet	14-3321	Model SFF2607M
Cabinet Base	14-3270	Models SFF2605W, SFF2505WT
Cabinet Base	14-3274	Models SFF2605R, SFF2505RT
Cabinet Base	14-3278	Models SFF2605E, SFF2505ET
Cabinet Top	14-3272	Models SFF2605W, SFF2505WT
Cabinet Top	14-3276	Models SFF2605R, SFF2505RT
Cabinet Top	14-3280	Models SFF2605E, SFF2605ET
Cabinet Leg	96-292	Models SFF2503WT, SFF2603W
Cabinet Leg	96-293	Models SFF2503RT, SFF2603R
Cabinet Leg	96-294	Models SFF2503ET, SFF2603E
Cabinet Leg	96-323	Model SFF2607M
Cabinet Leg	96-316	Models SFF2605W, SFF2505WT
Cabinet Leg	96-317	Models SFF2605R, SFF2505RT
Cabinet Leg	96-318	Models SFF2605E, SFF2505ET
Brass Handle	HDW2004	Model SFF2605 Series

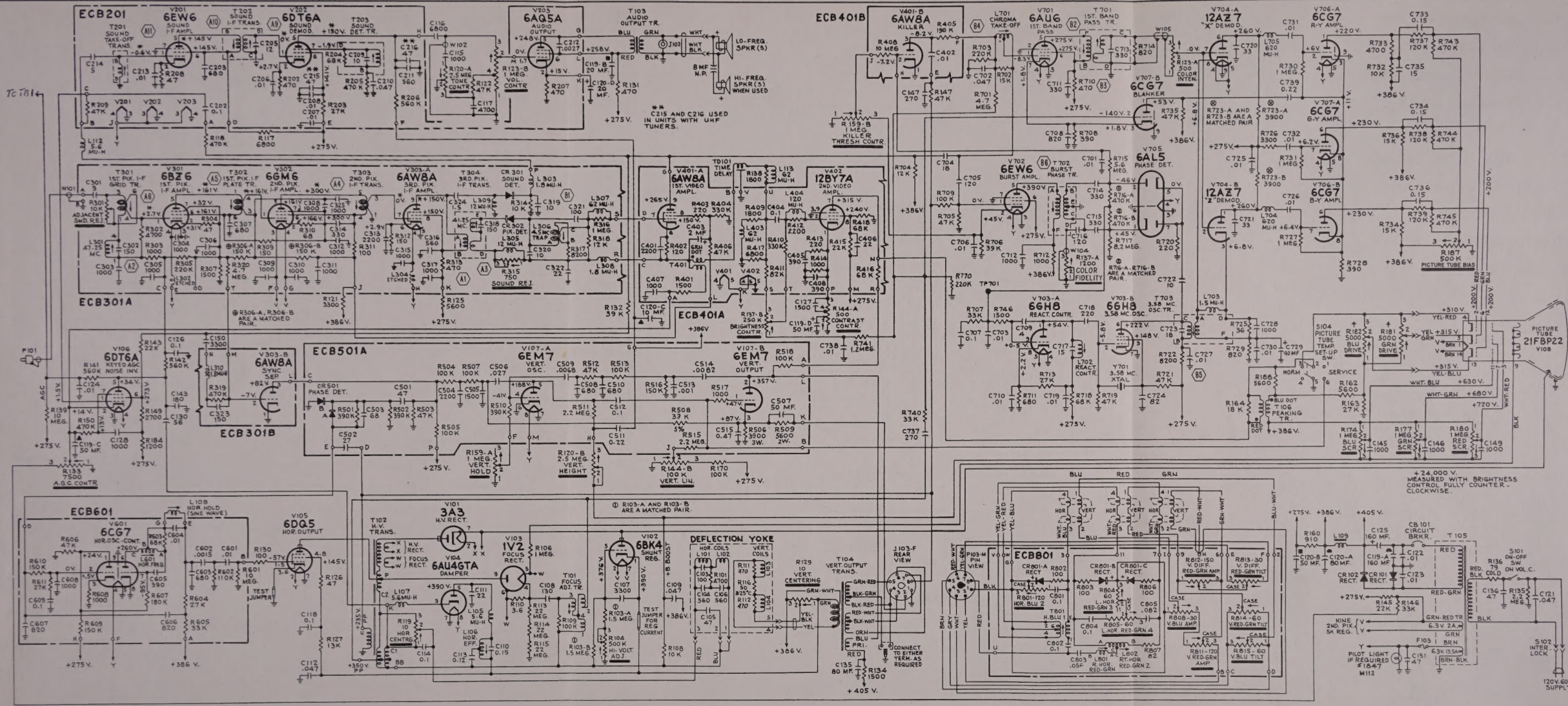
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401

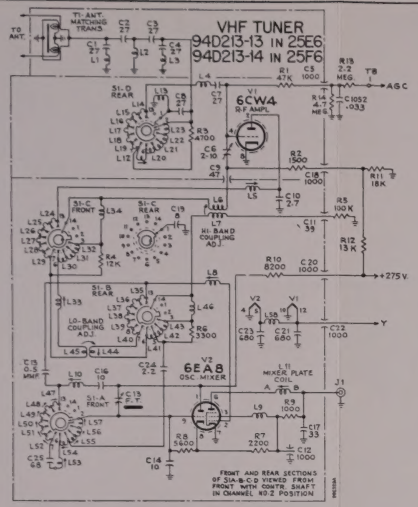
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

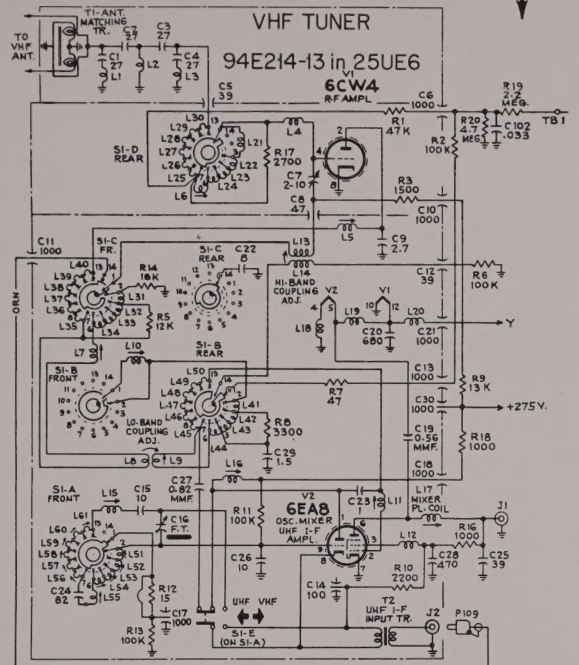

ECB201
ECB301A
ECB301B
ECB401A
ECB401B
ECB501A
ECB601
ECB801
6EW6
6DT6A
6DQ6
6BZ6
6GM6
6AW8A
6AQ5A
6AU6
6AL5
12AZ7
6CG7
6EM7
6BK4
1V2
3A3
6AU4GTA
6AW8A
12BY7A
6GH8
21FBP22
DEFLECTION YOKE
PICTURE TUBE
+24,000 V. MEASURED WITH BRIGHTNESS CONTROL FULLY COUNTER-CLOCKWISE.
ADMIRAL CHASSIS 25E6, 25F6
Schematic Diagram Courtesy of The Admiral Corporation

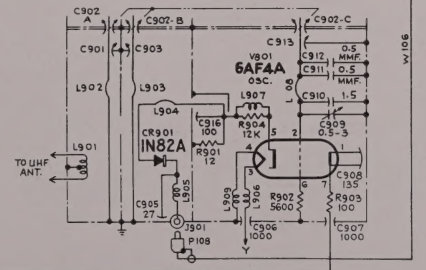
ADMIRAL MODELS C7141, C7142, C7143, CU7141, CU7142, CU7143, L7131, L7132, L7133, L7151, L7152, L7161, L7179, LS7151, LS7152, LS7161, LS7179, LS7181, LS7182, LS7183, LU7131, LU7132, LU7133, LU7151, LU7152, LU7161, LU7179, T7120, T7121, T7122, T7123, TU7120, TU7121, TU7122, TU7123, (CH. 25E6, 25F6, 25UE6, 6R3)

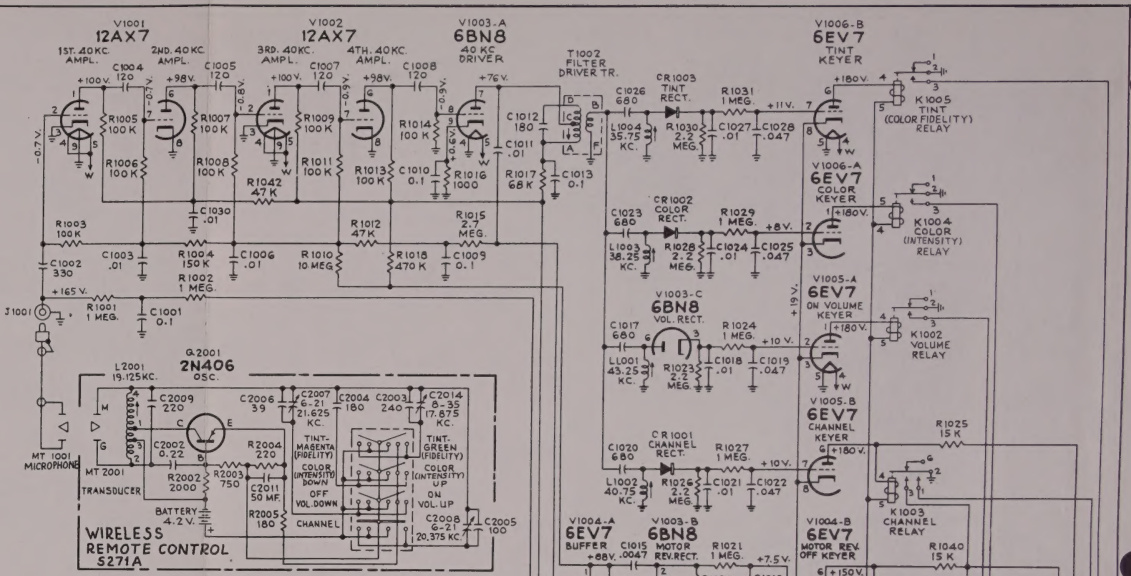
← ADMIRAL

ADMIRAL


VHF TUNER
94D213-13 IN 25E6
94D213-14 IN 25F6
6CW4
6EA8
FRONT AND REAR SECTIONS OF S1A-B-C-D VIEWED FROM FRONT WITH CONTR. SHAFT IN CHANNEL NO.2 POSITION

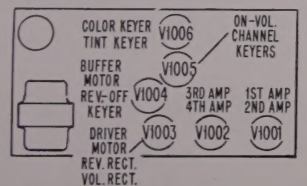

VHF TUNER
94E214-13 in 25UE6
6CW4
6EA8
FRONT AND REAR SECTIONS OF S1A-B-C-D VIEWED FROM FRONT WITH CONTROL SHAFT IN CHANNEL NO.1 POSITION.

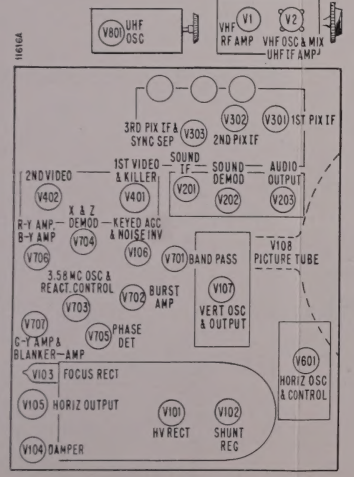




TUBE COMPLEMENTS AND LOCATIONS

V1	—6CW4	V702	—6EW6
V2	—6EA8	V703	—6GH8
V101	—3A3	V704	—12AZ7
V102	—6BK4	V705	—6AL5
V103	—1V2	V706	—6CG7
V104	—5AU4GTA	V707	—6CG7
V105	—6DQ5	V801	—6AF4A
V106	—6DT6A	V1001	—12AX7
V107	—6EM7	V1002	—12AX7
V108	—21FBP22	V1003	—6BN8
V201	—6EW6	V1004	—6EV7
V202	—6DT6A	V1005	—6EV7
V203	—6AQ5A	V1006	—6EV7
V301	—6BZ6	CR101	—S3B20-1
V302	—6GM6	CR102	—S3B20-1
V303	—6AW8A	CR301	—S3C21-5
V401	—6AW8A	CR302	—S3C21-6
V402	—12BY7A	CR801A	
V601	—6CG7	CR801B	S3B19-1
V701	—6AU6	CR801C	
		Q2001	—2N406





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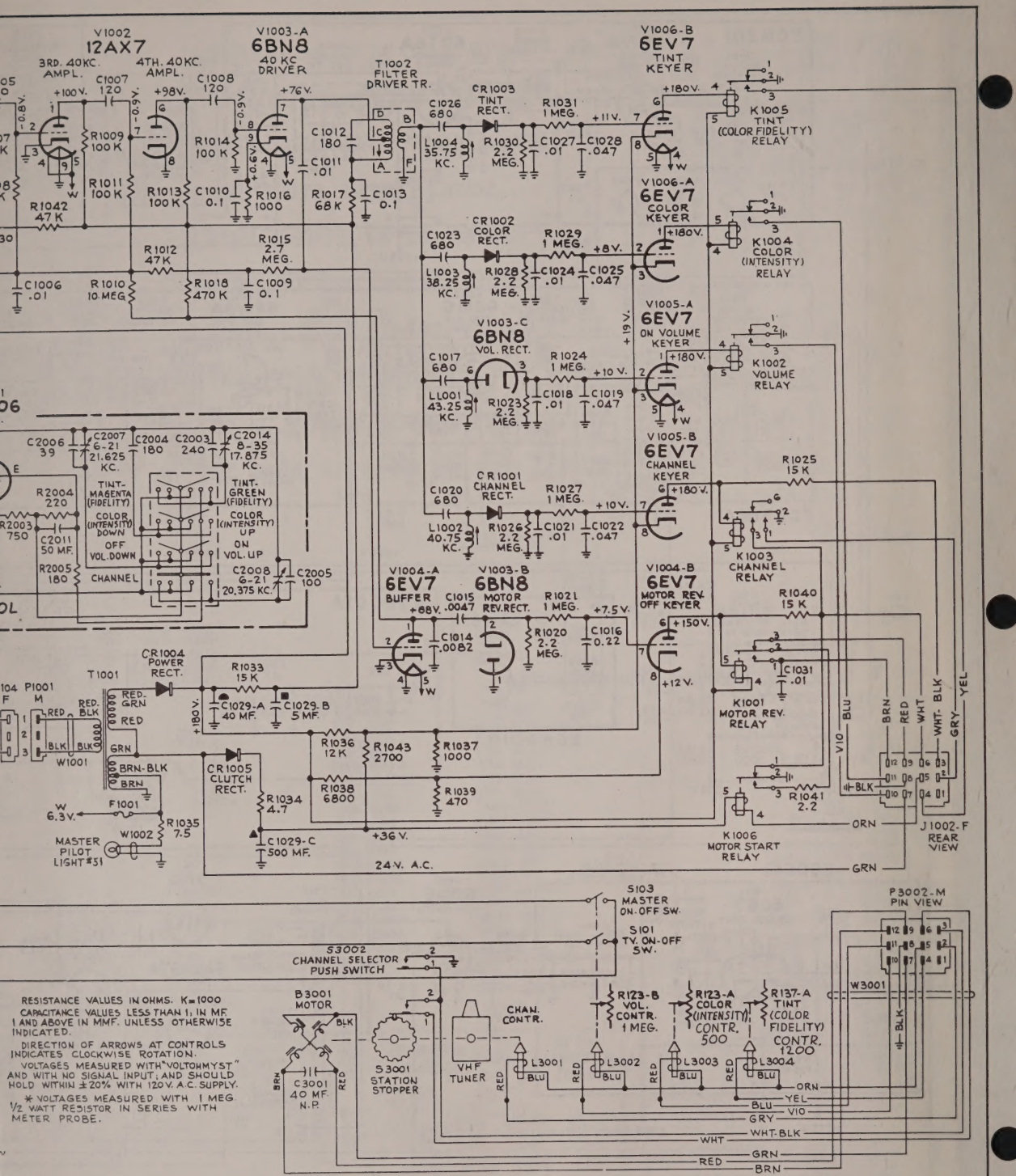
Information Courtesy of The Admiral Corporation



RESISTANCE VALUES IN OHMS. K=1000
CAPACITANCE VALUES LESS THAN 1; IN MF
1 AND ABOVE IN MMF. UNLESS OTHERWISE INDICATED.
DIRECTION OF ARROWS AT CONTROLS INDICATES CLOCKWISE ROTATION.
VOLTAGES MEASURED WITH "VOLTOHMYST" AND WITH NO SIGNAL INPUT; AND SHOULD HOLD WITHIN ±20% WITH 120 V. A.C. SUPPLY.
* VOLTAGES MEASURED WITH 1 MEG. ½ WATT RESISTOR IN SERIES WITH METER PROBE.

Information Courtesy of The Admiral Corporation